References

Abbas, A. K., Lichtman, A. H., 2003. Cellular and Molecular Immunology. Elsevier, Amsterdam.

Abdel-Hameed, E. S. S., 2009. Total phenolic contents and free radical scavenging activity of certain Egyptian *Ficus* species leaf samples. *Food Chemistry* 114 (4): 1271-1277.

Abdur Rahman, M, A., Moon, S-S., 2007. Isoetin 5'-Methyl Ether, A Cytotoxic Flavone from *Trichosanthes kirilowii*. Bulletin of Korean Chemical Society 28 (8), 1261-1264.

Abo K. A. Ashidi J. S., 1999. Antimicrobial screening of *Bridelia micrantha*, *Alchormea cordifolia* and *Boerhavia diffusa*. African Journal of Medicine & Medical Sciences 28(3-4), 167-169.

Abrosca, B. D., Fiorentino, A., Monaco, P., Oriano, P. Pacifico, S., 2006. Annurcoic acid: A new antioxidant ursane triterpene from fruits of cv. Annurca apple. Food Chemistry 98, 285–290.

Acharya, S., Datra, A., Bag, P. K., 2009. Evaluation of the antimicrobial activity of some medicinal plants against enteric bacteria with particular reference to Multi-Drug Resistant *Vibrio cholerae*. Tropical Journal of Pharmaceutical Research 8, 231-237.

Adedapo, A. A., Sofidiya, M. O., Masika, P. J., Afolayan, A. J., 2008. Anti-Inflammatory and Analgesic Activities of the Aqueous Extract of*Acacia karroo* Stem Bark in Experimental Animals. Basic & Clinical Pharmacology & Toxicology 103, 397–400.

Adedapo, A. A., Sofidiya, M. O., Masika, P. J., Afolayan, A. J., 2008. Safety evaluations of the aqueous extract of Acacia karroo stem bark in rats and mice. Scientific Commons

Aderibigbe, A.O., Emudianughe, T.S., Lowal, B.A., 2001. Evaluation of antidiabetic action of Mangifera indica in mice. Phytotherapy Research 15, 456–458.

Aderogba, M. A., McGaw, L. J., Ogundaini, A. O., Eloff, J. N., 2007. Antioxidant activity and cytotoxicity study of the flavonol glycosides from *Bauhinia galpinii*. Natural Product Research 21, 591-599.

Adewusi, E. A., Afolayan, A. J., 2009a. Antibacterial, antifugal and antioxidant activity of the root and leaves of *Pelargonium reniforme* Curtis (Geraniaceae). African Journal of Biotechnology, 8(22), 6425-6433.

Adewusi, E. A., Afolayan, A. J., 2009b. Safety evaluation of the extract from the roots of *Pelargonium reniforme* Curtis in male Wistar rats. African Journal of Pharmacy and Pharmacology 3(8), 368-373.

Adzu, B., Abubakar, M. S., Izebe, K. S., Akumka, D. D., Gamaniel, K. S., 2005. Effect of Annona senegalensis rootbark extracts on Naja migricotlis nigricotlis venom in rats. Journal of Ethnopharmacology 96, 507–513.

Afolayan, A. J., Yakubu, M. T., 2009. Effect of *Bulbine natalensis* Baker stem extract on the functional indices and histology of the liver and kidney of male Wistar rats. Journal of Medicinal Food. 12(4): (in press), DOI:10.1089/jmf.2008.0221.

Agnihotri, V. K., Elsohly, H. N., Smillie, T. J., Khan, I. A., Walker, L. A., 2009. Constituents of *Leonitis leonurus* flowering tops. Phytochemistry letters 2:103-105.

Aguirre-Crespo, F., Vergara-Galicia, J., Villalobos-Molina, R., L´opez-Guerrero, J. J., Navarrete-V´azquez, G., Estrada, S., 2006. Ursolic acid mediates the vasorelaxant activity of *Lepechinia caulescens* via NO release in isolated rat thoracic aorta. Life Science 79, 1062–1068.

Ahmed, A. S., Igwe, C. C., Eloff, J. N., 2009. Preliminary studies of the antibacterial activities of *Combretum vendae* leave extract. African Journal of Traditional Medicine 366-367.

Akah, P. A., 1996. Antidiarrhoeal activity of *Kigalia africana* in Experimental animal.Journal of Herbs and Spices Medicinal plants 4, 31-38.

Akah, P. A., Nwafor, S. V., 1999. Studies on anti-ulcer properties of Cissampelos mucronata leaf extract. Indian Journal of Experimental Biology 37 (9), 936 –938.

Akula, U. S., Odhav, B., 2008. In Vitro 5-lpiooxygenase inhibition of polyphenolic antioxidant from undomesticated plants of South Africa. Journal of Medical plant Research 2(9), 207-212.

Alam, M. S., Chopra, N., Ali, M., Niwa, M., Sakae, T., 1994. Ursane and sterol derivatives from *Pluchea lanceolata*. Phytochemistry, 37, 521–524.

Albuquerque, U. P., Hanazaki, N., 2006. As pesquisas etnodirigidas na descoberta de novos farmacos de interesse medico e farmaceutico: fragilidades e pespectivas. Brazilian Journal of Pharmacognosy 16, 678–689.

Al-Khatib, M. S., Khyami-Horani, H., Badran, E., Shehabi, A. A., 2007. Incidence and characterization of diarrheal enterotoxins of fecal *Bacillus cereus* isolates associated with diarrhea. Diagnostic Microbiology and Infectious Disease 59, 383–387.

Almeida, C. E., Karnikovski, M. G., Foleto, R., Baldisserotto, B., 1995. Analysis of antidiarrheic effect of plants used in popular medicine. Rev. Saude Publica 29,428-433.

Amabeoku, G. J., 2009. Antidiarrhoeal activity of *Geranium incanum* Burm. f. (Geraniaceae) leaf aqueous extract in mice. Journal of Ethnopharmacology 123,190–193.

Amabeoku, G. J., Bamuamba, K., 2010. Evaluation of the effects of *Olea europaea L.subsp. africana* (Mill.) P. S. Green (Oleaceae) leaf methanol extract aginst Castor oil-induced diarrhoea in mice. Journal of Pharmcy and Pharmacology 62(3), 368-373.

Amara, A. A., El-Masry, M. H., Bogdady, H. H., 2008. Plant crude extracts could be the solution: Extracts showing in vivo antitumorigenic activity. PakistanJouranl of Pharmaceutical Sciences, 21(2), 159-171.

Amusan, O. O. G., Sukati, N. A., Dlamini, P. S., and Sibandz, F. G., 2007. Some Swazi phytomedicines and their constituents. African Journal of Biotechnology 6(3), 267-272.

Angeh, J. E., Huang, X., Sattler, I., Swan, G. E., Dahse, H., Hartl, A., Eloff, J. N., 2007. Antimicrobial and anti-inflammatory activity of four known and one new triterpenoid from *Combretum imberbe* (Combretaceae). Journal of Ethnopharmacology 110, 56–60.

Angeh, J. E., Huang, X., Swan, G. E., Mollman, U., Sattler, I., Eloff, J. N., 2007. Novel antibacterial triterpenoin from *Combretum padoides* (Combretaceae). ARKICOC (ix) 113-120.

Annese, V., Janssens, J., Vantrappen, G. *et al*., 1992. Erythromycin accelerates gastric emptying by inducing antral contractions and improved gastroduodenal coordination. Gastroenterology 102, 823–828.

Appidi, J. R., Grierson, D. S., Afolayan, A. J., 2008. Ethnobotanical study of plants used for the treatment of diarrhoea in the Eastern Cape, South Africa. Pakistan Journal of Biological Sciences 11, 1961–1963.

Arnold, H-J., Gulumian, M., 1984. Pharmacopoeia of traditional medicinein Venda. Journal of Ethnopharmacology 12, 35–74.

Arts, I. C. W., Hollman, P. C. H., 2005. Polyphenols and disease risk in epidemiologic studies. American Journal of Clinical Nutrition, 81(1), 317S–325S.

Aruoma, O. I., Colognato, R., Fontana, I., Gartlon, J., Migliore, L., Koike, K., Coecke, S., Lamy, E., Mersch-Sundermann, V., Laurenza, I., Benzi, L., Yoshino, F., Kobayashi, K., Lee, M. C., 2006. Molecular effects of fermented papaya preparation on oxidative damage, MAP kinase activation and modulation of the benzo[a]pyrene mediated genotoxicity. Biofactors 26, 147–159.

Asase, A. A., Oteng-Yeboah, G. T., Odamtten Simmonds, M. S., 2005. Ethnobotanical study of some Ghanaian anti-malarial plants. Journal of Ethnopharmacology 99, 1221-1229

Asres, K., Bucar, F., Knauder, E., Yardley, V., Hendrick, H., Croft, S. L., 2001. *In vitro* antiprotozoal activity of extract and compound from the stem bark of *Combretum molle*. Phytotherapy Research 15(7), 613-617.

Athanasiadou, S., Houdijk, J., Kyriazakis, I., 2008. Exploiting synergisms and interactions in the nutritional approaches to parasite control in sheep production systems. Small Ruminant.Research 76, 2–11.

Atta, A. H., Mouneir, S. M., 2005. Evaluation of some medicinal plant extracts for antidiarrhoeal activity. Phytotherapy Research 19(6), 481–485.

Auroma, O. I., Halliwell, B., Laughton, M. J., Quinlan, G. J., Gutteridge, J. M. C., 1989. The mechanism of initiation of lipid peroxidation. Evidence against a requirement for an iron(II)-iron(III) complex. Biochemistry Journal 258:617– 620.

Aworet-Samseny, R. R., Souza, A., Kpahé, F., Konaté, K., Datté, J. Y., 2011. *Dichrostachys cinerea* (L) Wight et Arn. (Mimosaceae) hydro-alcoholic extract action on the contractility of tracheal smooth muscle isolated from guinea-pig. BMC Complementary and Alternative Medicine 11, 23.

Ayinde, B. A., Owolabi, O. J., 2009. Effect of the aqueous extract of *Ficus capensis* Thunb (Moraceae) leaf on gastrointestinal motility. Journal of Pharmacognosy and Phytotherapy 1(3), 031-035.

Babajide, O. J., Mabusela, W. T., Green, I. R., Ameer, F., Weitz, F., Iwouha, E. I., 2010. Phytochemical screening and biological activity studies of five South African indigenous medicinal plants. Journal of Medicinal Plant Research 2(18), 1924-1932.

Baker, J. T., Borris, R. P., Carte, B., Cardell, G. A., Soejarto, D. D., Gragg, G. M., Gupta, M. P., Iwu, M. M., Madilid, D. R., and Tyler, V. E., 1995: . Natural product drug discovery and development: New perspectives on international collaboration. Journal of Natural products 58(9), 1325-1357.

Baldi, F., Bianco, M. A., Nardone, G., Pilotto, A., Zamparo, E., 2009. Focus on acute diarrhoeal disease. World Journal of Gastroenterology 15(27), 3341-3348.

Bamuamba, K., Gammon, D. W., Meyers, P., Dijoux-Franca, M.-G., Scott, G., 2008. Anti-mycobacterial activity of five plant species used as traditional medicines in the Western Cape Province (South Africa). Journal of Ethnopharmacology 117, 385–390.

Bandaranayake, W. M., 2006. Quality control, Screening Toxicity and Regulation of Herbal Drugs. In: Modern phytomedicine. Turning medicinal plants into drugs (Edited by Ahmed F Aqil and Owais M) WILEY-VCH Verlag GmbH and Co KGaA, Weinheim Pp 25-53.

Barbosa, E., Calzada, F., Campos, R., 2007. In vivo antigiardial activity of three flavonoids isolated of some medicinal plants used in Mexican traditional medicine for the treatment of diarrhea. Journal of Ethnopharmacology 109, 552–554.

Barbour, E. K., Sharif, M. A., Sagherian, V. K., Habre, A. N., Talhouk, R. S., Talhouk, S. N., 2004. Screening of selected indigenous plants of Lebaonon for antimicrobial activity. Journal of Ethnopharmacology 93, 1-7.

Barton, M. D., 2000. Antibiotic use in animal feed and its impact on human health. Nutritional Research Review 13, 279-299.

Batawila, K., Kokou, K., Koumaglo, K., Gbeassor, M., de Foucault, B., Bouchet, Ph. Akpagana, K., 2005. Antifungal activities of five Combretaceae used in Togolese traditional medicine. Fitoterapia 76(2), 264-268.

Beaugerie L, Flahault A, Barbut F et al. Antibiotic-associated diarrhoea and Clostridium difficile in the community. Alimentary Pharmacology and Therapeutics 2003; 17: 905–912

Beaugerie, L., Pettit, J-C., 2004. Antibiotic-associated diarrhoea. Best Practice & Research Clinical Gastroenterology 18, 337–352.

Beavis, K. G., Weymouth, L. A., 1996. Cellular and Molecular pathology of Infectious diseases. In: Cellula and Molecular Pathogenesis. Editor, Alphonse E. Sirica: Lippincott-Raven Publishers, 277 East Washington Square, Philadelphia, Pennsylvania 19106-3780 Pp 219-244.

Berker, K. I., Guclu, K., Tor, I., Apak, R., 2007. Comparative evaluation of Fe(III) reducing power-based antioxidant capacity assays in the presence of phenathroline, batho-phenanthtroline, tripyridyltriazine (FRAP) and ferricyanide reagent. *Talanta* 72, 1157-1165.

Berlin, E.A., Berlin, B., 2005. Some field methods in medical ethnobiology. Field Methods 17, 235–268.

Bessong, P. O., Obi, C. L., Andreola, M. L., Rojas, L. B., Pouysegu, L., Igumbor, E., Marion Meyer, J. J., Quideau, S., Litvak, S., 2005. Evaluation of selected South African medicinal plants for inhibitory properties against human immunodeficiency virus type 1 reverse transcriptase and integrase. Journal of Ethnopharmacology 99, 83–91.

Bhan, M. K., 2000. Current and Future: Management of childhood diarrhoea. International Journal of Antimicrobial Agents 14, 71-73.

Bhargav, B., Rupal, A. V., Reddy, A. S., Narasimhacharya, A. V. R. L., 2009. Antihyperglycaemic and hypolipidemic effect of *Adansonia digitata* L. On Alloxan induced diabetic rtas. Journal of Cells and Tissue Research 9(2), 1879-1882.

Bhat, R. B., Jacobs, T. V., 1995. Traditional herbal medicine in Transkei. Journal of Ethnopharmacology, 48, 7-12.

Bienvenu, E., Amabeoku, G. J., Eagles, P. K., Scott, G., Springfield, E. P., 2002. Anticonvulsant activity of aqueous extract of Leonotis leonurus. Phytomedicine 9, 217–223.

Bisi-Johnson, M. A., Obi, C. L., Kambizi, L., Nkomo, M., 2010. A survey of indigenous herbal diarrhoeal remedies of O.R. Tambo district, Eastern Cape Province, South Africa. African Journal of Biotechnology 9(8), 1245-1254.

Bizimenyera, E. S., Githiori, J. B., Eloff, J. N.,Swan, G. E., 2006. In vitro activity of *Peltophorum africanum* (Fabaceae) extracts on the egg hatching and larval development of the parasitic nematode *Trichostrongylus colubriformis*. Veterinary Parasitology 142, 336-343.

Blikslager, A. T., 2010. Mucosal epithelial barrier repair to maintain pig health. Livestock Science 133, 194–199.

Bohn, L. M., Raehal, K. M., 2006. Opioid receptors signalling: relevance for gastrointestinal therapy. Current Opinion in Pharmacology 6, 559-563.

Borghetti, P., Saleri, R., Mocchegiani, E., Corradi, A., Martelli, P., 2009. Infection, Immunity and the Neuroendocrine Response. Veterinary Immunology and Immunopathology 130, 141–162.

Borrelli, F., Capasso, F., Capasso, R., Ascione, V., Aviello, G., Longo, R., Izzo, A. A., 2006. Effects of *Boswellia serrata* on intestinal motility in rodents: inhibition of diarrhoea without constipation. British Journal of Pharmacology 148, 553-560

Botes, L., Van der Westhuizen, F. H., Loot du, T., 2008. Phytochemical and antioxidant capacity of two *Aloe greatheadii var.* davyana extract. Molecules 13(9), 2169-2180.

Brand-Williams, W., Cuvelier, M.E., Berset, C., 1995. Use of a free radical method to evaluate antioxidant activity. Lebensmittel Wissenschaftund Technologie 28, 25-30.

Brendler, T., Van Wyk, B. E., 2008. A historical, scientific and commercial perspective on the medicinal use of *Pelargonium sidioides* (Geraniaceae). Review. Journal of Ethnopharmacology 119, 420–433.

Breytenbach, J. C., Malan, S. F., 1989. Pharmacological properties of *Combretum zeyheri*. South African Journal of Sciences 85(6), 372-374.

Brijesh, S., Daswani, P. G., Tetali, P., Rojatkar, S. R., Antia, N. H., Birdi, T. J., 2006. Studies on *Pongania pinnata* (L) Pierre leaves: Understanding the mechanism(s) of action in infectious diarrhea. Journal of Zhegiang University SCIENCE B 7(8), 665-674.

Brown, J.H., Taylor, P., 1996. Muscarinic receptor agonists and antagonists. In: Gilman, A.G., Hardman, J.G., Limbird, L.E., Molinoff, P.B., Ruddon, R.W. (Eds.), Goodman & Gillman's: The Pharmacological Basis of Therapeutics. McGraw-Hill, New York, pp. 141–159.

Buettner, G.R., 1993. The pecking order of free radicals and antioxidants lipid peroxidation alpha-tocopherol and ascorbate, Archive Biochemisstry Biophysics 300, 535–543.

Buret, A. G. 2007. Mechanisms of epithelial dysfunction in giardiasis. GUT 56(3), 328–335.

Butler, K. M., 2008. Enterococcal Infection in Children. Seminars in Pediatric Infectious diseases 17, 128-139

Buwa, L. V., Van Staden, J., 2006. Antibacterial and Antifungal activity of traditional medicinal plants used against venereal diseases in South Africa. Journal of Ethnopharmacology 103(1), 139-142.

Cai, Y. Z., Sun, M., and Corke, H., 2003. Antioxidant activity of betalains from plants of the Amaranthaceae. Journal of Agricultural and Food chemistry 51(8), 2288-2294.

Calis, I., Yürüker, A., Tas¸ demir, D., Wright, A.D., Sticher, O., Luo, Y.D., Pezzuto, J. M., 1997. Cycloartane triterpene glycosides from the roots of *Astragalus melanophrurius*. Planta Medica 63, 183–186.

Calzada, F., Yépez Mulia, L., Aguilar, A., 2006. In vitro susceptibility of *Entamoeba histolytica* and *Giardia lamblia* to plants used in Mexican traditional medicine for the treatment of gastrointestinal disorders. Journal of Ethnopharmacology 108, 367–370.

Caparroz-Assef, S. M., Grespan, R., Batista, R. C. F., Bersani-Amado, F. A., Baroni, S., Dantas, J. A., Cuman, R. K. N., Bersani-Amado, C.A., 2005. Toxicity studies of Cordia salicifolia extract. Acta Scientiarum Health Science 27, 41–44.

Casburn-Jones, A. C., and Farthing, M. J. D., 2004. Management of infectious diarrhoea. GUT 53, 296-305.

Castillo, N. A., de LeBlanc, A. M., Galdeano, C. M., Perdigón, G., 2011. Probiotics: An alternative strategy for combating salmonellosis Immune mechanisms involved. Food Research International doi:10.1016/j.foodres.2011.04.031

Catalá, A., 2006. An overviewof lipid peroxidation with emphasis in outer segments of photoreceptors and the chemiluminescence assay. Int. J. Biochem. Cell Biol. 38, 1482–1495, Review.

Catala, A., 2009. Lipid peroxidation of membrane phospholipids generates hydroxy-alkenals and oxidized phospholipids active in physiological and/or pathological conditions. Chemistry and Physics of Lipid 157: 1-11.

Catnach, S. M., Fairclough, P. D., 1992. Erythromycin and the gut. Gut 33, 397–401.

Cellek, S., John, A. K., Thangiah, R., Dass, N. B., Bassil, A. K., Jarvie, E.M., Lalude, O., Vivekanandan, S., Sanger, G. J., 2006. 5-HT_4 receptor agonists enhance both cholinergic and nitrergic activities in human isolated colon circular muscle. Neurogastroenterology and Motility 18, 853–861.

Ceylan, E., Fung, D. Y. C., 2004. Antimicrobial activity of spices. Journal of RapidMethods and Automation in Microbiology, 12(1), 1–55.

Chacin-Bonilla, L., 2010. Epidemiology of *Cyclospora cayetanensis*: A review focusing in endemic areas. Acta Tropica 115, 181–193.

Chang, S-L., Chiang, Y-M., Chang, C. L-T., Yeh, H-H., Shyur, L-F., Kou, Y-H., Wu, T-K., Yang, W-C., 2007. Flavonoid, Centaurein and Centaurenidin, from *Bidens pilosa* stimulate IFN-γ expression. Journal of Ethnopharmacology, 112, 232-236.

Charlier, C., Michaux, C., 2003. Dual inhibition of cyclooxygenase-2 (COX-2) and 5-lipoxygenase (5-LOX) as a new strategy to provide safer non-steroidal anti-inflammatory drugs. European Journal of Medicinal Chemistry 38, 645-659.

Chaturongakul, S., Raengpradub, S., Wiedman, M., Boor, K. J., 2008. Modulation of stress and virulence in Listeria monocytogenes. Trend in Microbiology 16, 388-396.

Chen, J-C., Chang, Y-S., Wu, S-L., Chao, B-C., Chang, C-S., Li, C-C., Ho, T-Y., Hsiang, C-Y., 2007. Inhibition of *Escherichi coli* heat labile enterotoxins induced diarrhoea by *Chaenomeles speciosa.* Journal of Ethnopharmacology 113, 233-239.

Chen, J-C., Ho, T-Y., Chang, Y-S., Wu, S-L., Li, C-C., Hsiang, C-Y., 2009. Identification of *Escherichia coli* enterotoxin inhibitors from traditional medicinal herbs by *in silico*, *in vitro*, and *in vivo* analyses. Journal of Ethnopharmacology 121, 372–378.

Chen, K., Suh, J., Carr, A. C., Morrow, J. D., Zeind, J., Frei, B., 2000. Vitamin C suppresses oxidative lipid damage in vivo, even in the presence of iron overload. American Journal of Physiology, Endocrinology and Metabolism 279, E1406–E1412.

Chen, X-W., Serag, E. S., Sneed, K. B., Zhou, S-F., 2011. Herbal bioactivation, molecular targets and the toxicity relevance. Chemico-Biological Interactions 192, 161–176.

Chetty, N., Irving, H. R., Coupar, I. M., 2006. Activation of 5-HT3 receptors in the rat and mouse intestinal tract: a comparative study. British Journal of Pharmacology 148, 1012–1021.

Chi, J., VanLeeuwen, J. A., Weersink, A., Keefe, G. P., 2002. Direct production losses and treatment costs from bovine viral diarrhoea virus, bovine leukosis virus, *Mycobacterium avium* subspecies *paratuberculosis*, and *neospora caninum.* Preventive veterinary medicine 55, 137-153.

Chiang, Y-M., Chang, C, L-T., Yang, S-L., Shyur, L-F., 2007. Cytopiloyne, a novel polyacetylenic glycoside from *Biden pilosa,* function as a T-helper cell modulator. Journal of Ethnopharmacology 110(3), 532-538.

Chinsamy, M., Finnie, J. F., Van Staden, J., 2010. The ethnobotany of South African medicinal orchids. South African Journal of Botany

Choma, I. M., Grzelak, E. M., 2011. Bioautography detection in thin-layer chromatography. Journal of Chromatography A 1218, 2684–2691.

Christophersen, O. A., Haug, A., 2005. Possible roles of oxidative stress, local circulatory failure and nutrition factors in the pathogenesis of hypervirulent influenza: Implications for therapy and global emergency preparedness. Microbial Ecology in Health and Disease 17, 189-199.

Cimanga, R. K., Kambu, K., Tona, L., Hermans, N., Apers, S., Totte, J., Pieters, L., Vlietinck, A. J., 2006. Cytotoxicity and in vitro susceptibility of *Entamoeba histolytica* to *Morinda Morindoides* leaf extract and its isolated constituents. Journal of Ethnopharmacology 107*, 83-90.*

Cimanga, R. K., Mukenyi, P. N. K., Kambu, O. K., Tona, G. L., Apers, S., Totté, J., Pieters, L., Vlietinck, A. J., 2010. The spasmolytic activity of extracts and some isolated compounds from the leaves of *Morinda morindoides* (Baker) Milne-Redh. (Rubiaceae). Journal of Ethnopharmacology 127, 215–220

Cimpoiu, C., 2006. Analysis of some natural antioxidants by Thin-Layer Chromatography and High performance Thin-layer Chromatography. Journal of liquid chromatography and related Technologies*,* 29: , 1125-1142.

Clarke, S. C., 2001. Diarrhoeagenic *Escherichia coli*-an emerging problem? Diagnostic Microbiology and infectious disease 41, 93-98.

Coates-Palgrave, M., 2002. Keith Coates-Palgrave Trees of Southern Africa, 3rd edition, imp. Struik Publishers. Cape Town.

Conforti, F., Sosa, S., Marrelli, M., Menichini, F., Statti, G. A., Uzunov, B., Tubaro, A., Menichini, F., Loggia, R. D., 2008. *In vivo* anti-inflammatory and *in vitro* antioxidant activities of Mediterranean dietary plants. Journal of Ethnopharmacology 116, 144-151.

Coopoosamy, R. M., 2011. Traditional information and antibacterial activity of Four *Bulbine* species (Wolf). African Journal of Biotechnology 10(2), 220-224.

Cos, P., Vanden Berghe, D.; De Bruyne, T.; Vlietinck, A.J. *Curr. Org. Chem.*, **2003**, 7, 1163.

Cotton, J. A., Beatty, J. F., Buret, A. G., 2011. Host parasite interactions and pathophysiology in Giardia infections. International J.ournal for Parasitology xxx , xxx–xxx

Coutino, R. R., Hernandez, C. P., Giles, R. H., 2001. Lectins in fruits having gastrointestinal activity: their participation in the hemagglutinating property of *Escherichia coli* O157:H7. Archives of Medical Research 32, 251–257.

Cowan, M. M., 1999. Plant products as antimicrobial agents. Clinical Microbiology Review 12, 564–582.

Cuello, S., Alberto, M. R., Zampini, I. C., Ordonez, R. M., Isla, M. I., 2011. Comparative study of antioxidant and anti-inflammatory activities and genotoxicity of alcoholic and aqueous extracts of four Fabiana species that grow in mountainous area of Argentina. Journal of Ethnopharmacology xxx , xxx– xxx

Cui, J., Wang, Z. Q., Xu, B. L., 2011. Review: The epidemiology of human tirchinellosis in China during 2004-2009. Acta tropica 118, 1-5.

Cuzzocrea, S., Mazzon, E., Serraino, I., Dugo, L., Centorrino, T., Ciccolo, A., Sautebin, L., Caputi, A.P., 2001. Celecoxib, a selective cyclo-oxygenase-2 inhibitor reduces the severity of experimental colitis induced by dinitrobenzene sulfonic acid in rats. European Journal of Pharmacology. 431, 91–102.

da Silva, G., Tamia, M., Rocha, J., Serrona, R., Gomes, E. T., Sepodea, B., Silva, O., 2010. *In vivo* Anti-inflammatory effect and. toxicological screening of *Maytenus heterophylla* and *Maytenus senegalensis* extracts. Human and Experimental Toxicology 000(00) 1-8 DOI: 10: 1177/0960327110379242

Dambisya, Y. M., Tindimwebwa, G., 2003. Traditional remedies in children around Eastern Cape, South Africa. East African Medical Journal 80, 401–405.

Danna, P. L., Urban, C., Bellin, E *et al*., 1991. Role of candida in pathogenesis of antibiotic-associated diarrhoea in elderly patients. Lancet 337, 511–514.

de Boer, H. J., Kool, A., Broberg, A., Mziray, W. R., Hedberg, I., Levenfors, J. J., 2005. Antifungal and antibacterial activity of some herbal remedies from Tanzania. Journal of Ethnopharmacology 96(3), 461-469.

de Oliveira, C. E. V., Stamford, T. L. M., Neto, N. J. G., de Souza, E. L., 2010. Inhibition of *Staphylococcus aureus* in broth and meat broth using synergies of phenolics and organic acids. International Journal of Food Microbiology 137, 312-316.

De Villiers, B. J., Van Vuuren, S. F., Van Zyl, Z. L., Van Wyk, B–E., 2010. Antimicrobial and antimalarial activity of *Cussonia* species (Araliaceae). Journal of Ethnopharmacology 129: 189-196.

de Wet, H., Nkwanyana, M. N., van Vuuren, S. F., 2010. Medicinal plants used for the treatment of diarrhoea in northern Maputaland, KwaZulu-Natal Province, South Africa. Journal of Ethnopharmacology 130. 284–289.

Deeni, Y. Y., Hussain, H. S. N., 1994. Screening of *Vernonia kotschyana* for antimicrobial activity and alkaloids. International Journal of Pharmacognosy 32, 388–395.

Dekker, T. G., Fourie, T. G., Matthee, E., Snycker, F. O., Ammann, W., 1987. Studies of South African medicinal plants. Part 4: Jaherin, a new daphnane diterpene with antimicrobial properties from Jatropha zeyheri. South African Journal of Chemistry, 40, 74–76

Delaporte, R. H., Sanchez, G. M., Cuellar, A. C., Giuliani, A., Palazzo de Mello, J. C., 2002. Anti-inflammatory activity and lipid peroxidation inhibition of iridoid lamiide isolated from *Bouchea fluminensis* (vell.) Mold. (Verbenaceae). Journal of Ethnopharmacology 82: 127-130.

Delves, P., Martin, S., Burton, D., Roitt, I., 2006. Roitt's Essential Immunology, 11th ed. Wiley-Blackwell, Hoboken, NJ, USA.

Desire, O., Riviere, C., Razafindrazaka, R., Goosens, L., Moreau, S., Guillon, J., Uverg-Ratsimamanga, S., Andriamadio, P., Moore, N., Randriantsoa, A., Raharisololalao, A., 2010. Antispasmodic and antioxidant activities of fraction sand bioactive constituent davidigenin isolated from *Mascarenhasia arborescens.* Journal of Ethnopharmacology 130, 320-328.

Deutschlander, M. S., Van de Venter, M., Louw, J., Lall, N., 2009. Hypoglycaemic activity of four plant extracts traditionally used in South Africa for diabetes. Journal of Ethnopharmacology, 124(3), 619-624.

Dickman, K. G., Hempson, S. J., Anderson, J., Lippe, S., Zhao, L., Burakoff, R., et al. 2000. Rotavirus alters paracellular permeability and energy metabolism in Caco-2 cells. American Journal of Physiology, Gastrointestinal and Liver Physiology, 279(4), G757–G766.

Dobbins, W. O., Herrero, B. A., Mansbach, C. M., 1968. Morphologic alterations associated with neomycin induced malabsorption. The American Journal of Medical Sciences 255, 63–77.

Dold, A. P., Cocks, M. L., 2001. Traditional veterinary medicine in the Alice district of the Eastern Cape Province, South Africa. South African Journal of Science 97, 375-379.

Du Toit, K., Elgorashi, E. E., Sarel, F. M., Drewes, S. E., Van Staden, J., Crouch, N. R., Mulholland, D. A., 2005. Anti-inflammatory activity and QSAR studies of compounds isolated from Hyacinthaceae and *Tachiadenus longiflorus* Griseh (Gentianaceae). Bioorganic and medicinal chemistry 13, 2561-2568.

Dudeja, P. K., and Ramaswamy, K., 2006. Physiology of Gastrointestinal Tract, *Fourth edition,* Edited by Leonard R. Johnson. Academic Press, Chicago USA.

Dupont, H. L., Marshall, G. D., 1995. HIV-associated diarrhoea and wasting. Lancet 346, 352-356.

Dweyer, D. J., Kohanski, M. A., Collins, J. J. 2009. Role of reactive oxygen species in antibiotic action and resistance. Current Opinion in Microbiology 12, 482–489.

Ebert, E. C., 2005. Gastrointestinal Complications of Diabetes Mellitus. Dis Mon 51, 620-663.

Ehling-Schulz, M., Fricker, M., Scherer, S., 2004. *Bacillus cereus*, the causative agent of an emetic type of food-borne illness. Molecular Nutrition and Food Research 48, 479–487.

Eldeen, I. M. S., Eldeen, I. M., Van Heerden, F. R., Van Staden, J., 2008. Isolation and Biological activities of Termilignan B and arjunic acid from *Terminalia sericea*. Planta Medica 74(4), 411-413.

Eldeen, I. M. S., Elgorashi, E. E., Mulholland, B. A., Van Staden, J., 2006. Anolignan B: A bioactive compound from the roots of *Terminalia sericea*. Journal of Ethnopharmacology 103(1), 135-138.

Eldeen, I. M. S., Elgorashi, E. E., Van Staden, J., 2005. Antibacterial, antiinflammatory, anti-cholinesterase and mutagenic effects of extrats obtained from some trees used in South African traditional medicine. Journal of Ethnopharmacology 102, 457-464

Eldeen, I. M. S., Van Heerden, F. R., Van Staden, J., 2007. Biological activities of cycloart-2, 3-ene-3, 25-diol isolated from the leaves of *Trichilia drageana* South African Journal of botany 73(3), 366-371.

Eldeen, I. M. S., Van Heerden, F. R., Van Staden, J., 2010. In vitro biological activities of niloticane, a new bioactive cassane diterpene from the bark of *Acacia nilotica* subsp. *Kraussiana*. Journal of Ethnopharmacology 128, 555–560.

Elgayyar, M., Droughon, F. A., Golden, D. A., Mount, J. R., 2001. Antimicrobial activity of essential oils from plants against selected pathogenic and saprophytic microorganisms. Journal of Food Protection 64, 1019-1024.

Elgorashi, E. E., Taylor, J. L. S., Maes, A., van Van Staden, J., De Kimpe, N., Verschaeve, L., 2003. Screening of medicinal plants used in South African traditional medicine for genotoxic effects. Toxicology Letters 143, 195–207.

Ellman, G. L., Coutney, D., Andies, V., Featherstone, R. M., 1961. A new and rapid colourimetric determination of acetylcholinesterase activity. Biochemical Pharmacology 7, 88–95.

Eloff, J. N. 2001. Antibacterial activity of Marula *(Sclerocarya birrea* (A. Rich.) Hochst. subsp. *caffra (Sond.) Kokwaro)* (Anacardiaceae) bark and leaves. Journal of Ethnopharmacology 76, 305-308.

Eloff, J. N., 1998. A sensitive and quick micro-plate method to determine the minimal inhibitory concentration of plant extracts for bacteria. Planta Medica, 64: 711-713.

Eloff, J. N., Famakin, J. O., Katerere, D. R., 2005. Isolation of antibacterial stilbenes from *Combretum woodii* (Combretaceae) leaves. African Journal of Biotechnology 4, 1166–1171.

Eloff, J. N., Katerere, D. R., McGaw, L. J., 2008. The Biological Activity and Chemistry of the Southern African Combretaceae. Journal of Ethnopharmacology 119, 686–699.

Elsinghorst, E. A., 2002. Enterotoxigenic *Escherichia coli,* In *Escherichia coli*: Virulence Mechanisms of a Versatile Pathogen. Elsevier Science (USA) Pp 155-187.

Epple, H. J., Schneider, T., Troeger, H., Kunkel, D., Allers, K., Moos, V., *et al*., 2009. Impairment of the intestinal barrier is evident in untreated but absent in suppressively treated HIV-infected patients. Gut 58, 220–227.

Erde'lyi, K., Kiss, A., Bakondi, E., Bai, P., Szabó, C., Gergely, P., Erdó di, F., Virá g, L., 2005.Gallotannin inhibits the expression of chemokines and inflammatory cytokines in A549 Cells. Molecular Pharmacology 68, 895–904.

Ernst, E., 2004. Risks of herbal medicinal products. Pharmacoepidemiology and Drug Safety 13, 767–771.

Escandell, J. M., Recio, M. C., Giner, R. M., Mánez, S., Cerdá-Nicolás, M., Merfort, I., Ríos, J. L., 2010. Inhibition of delayed-type hypersensitivity by cucurbitacin R through the curving of lymphocyte proliferation and cytokine expression by means of NF-AT translocation to the nucleus. Journal of Pharmacology and Experimental Therapeutics 332, 352–363.

Escandell, J. M., Recio, M. C., Mánez, S., Giner, R. M., Cerdá-Nicolás, M., Gil-Benso, R., Ríos, J. L., 2007. Dihydrocucurbitacin B inhibits delayed-type hypersensitivity reaction by suppressing lymphocyte proliferation. Journal of Pharmacology and Experimental Therapeutics 322, 1261–1268.

Essop, A. B., van Zyl, R. L., van Vureen, S. F., Mulholland, D and Vilijoen, A. M. 2008. The *in vitro* phamacological activities of South African Hermania species. Journal of Ethnopharmacology 119, 615-619.

Esterbauer, H., Schaur, R.J., Zollner, H., 1991. Chemistry and biochemistry of 4- hydroxynonenal, malonaldehyde and related aldehydes. Free Radical Biolology and Medicine 11, 81–128.

Estrada-soto, S., Rodriguez-Avilez, A., Castaneda-Avila, C., Castillo-Espana, P., Navarrete-Vazquez, G., Hernandez, L., and Aguirre-Crespo, F., 2007. Spasmolytic action of *Lepechinia caulescens* is through calcium blockage and NO release. Journal of Ethnopharmacology 114:364-370.

Fabry, W., Okemo, P., Ansorg, R., 1996. Activity of East African medicinal plants against *Helicobacter pylori*. Chemotherapy 42, 315–317.

Fallman, M., Gustavsson, A., 2005. Cellular Mechanisms of Bacterial Internalization Counteracted by *Yersinia*. International Review of Cytology 246, 135-188.

Farthing, M. J. G., 2002. Novel target for the control of secretory diarrhoea. Gut, 50(Suppl III):iii15–iii18

Farthing, M. J. G., Casburn-Jones, A., Banks, M. R., 2003. Getting control of intestinal secretion: thoughts for 2003. Digestive and Liver Disease 35, 378–385.

Fawole, O. A., Finnie, J. F., Van Staden, J., 2009. Antimicrobial activity and mutagenic effects of twelve traditional medicinal plants used to treat ailments related to the gastro-intestinal tract in South Africa. South African Journal of Botany 75, 356–362.

Fennell, A. W., Lindsey, K. L., McGaw, L. J., Sparg, S. G., Stafford, G. I., Elgorashi, E. E., Grace, O. M., van Staden, J. 2004. Assessing African medicinal plants for efficacy and safety: Pharmacological screening and toxicology. Journal of Ethnopharmacology 95, 205-217.

Field, M., 2003. Intestinal ion transport and the pathophysiology of diarrhea. Journal of Clinical Investigation 111, 931–943.

Fiorucci, S., Meli, R., Bucci, M., Cirino, G., 2001. Dual inhibitors of cyclooxygenase and 5-lipoxygenase. A new avenue in anti-inflammatory therapy? Biochemical Pharmacology 62, 1433–1438.

Fitzgerald, G. A., 2004. Coxibs and cardiovascular disease. New England Journal of Medicine 351, 1709−1711.

Forbes, V.S. (Ed.), 1986. Carl Peter Thunberg Travels at the Cape of Good Hope 1772–1775. Van Riebeeck Society, Cape Town, ISBN: 0620109815.

Forgacs, I., Patel, V., 2011. Diabetes and gastrointestinal tract. Medicine 39 (5), 288-292.

Fouche, G., Cragg, G.M., Pillay, P., Kolesnikova, N., Maharaja, V.J., Senabe, J., 2008. *In vitro* anticancer screening of South African plants. Journal of Ethnopharmacology 119, 455–461.

From, C., Hormazabal, V., Granum, P. E., 2007. Food poisoning associated with pumilacidin-producing *Bacillus pumilus* in rice. International Journal of Food Microbiology 115, 319–324.

Gadewar, S., Fasano, A., 2005. Current concepts in the evaluation, diagnosis and management of acute infectious diarrhea. Current Opinion in Pharmacology 5, 559–565.

Gaginella, S. T., Kachur. J. F., Tamai, H., Kershavarzian, A., 1995. Reactive oxygen and Nitrogen metabolites as mediators of Secretory Diarrhea. Gastroenterology 109, 2019-2028.

Gale, G. A., Kirtikara, K., Pittayakhajounwut, P., Sivichai, S., Thebtaranonth, Y., Thongpanchang, C., Vichai, V., 2007. In search of cyclooxygenase inhibitors, anti-*Mycobacterium tuberculosis* and anti-malarial drugs from Thai flora and microbes. Pharmacology and Therapeutics 115, 307-351.

Galvez, J., Zarzuelo, A., Crespo, M. E., Lorente, M. D., Ocete, M. A., Jimenez, J., 1993. Antidiarrhoeic activity of *Euphorbia hirta* extract and isolation of an active flavonoid constituent. Planta Medica 59(4), 333-336.

Gambhir, I. S., Nath, G., Jaiswal, J., Gopal, A., 2006. *Candida* Associated Acute Diarrhoea in Elderly. Journal of the Indian Academy of Geriatrics 2, 57-60.

Gangoue-Pieboji, J., Baurin, S., Frere, J. M., Ngassam, P., Ngameni, B., Azebaze, A., Pegnyemb, D. E., Watchueng, J., Goffin, C., Galleni, M., 2007. Screening of some medicinal plants from cameroonCameroon for beta-lactamase inhibitory activity Phytotherapy Research 21(3), 284-287.

Gautam, R., Saklani, A., Jachak, S., 2007. Indian medicinal plants as a source of antimycobacterial agents. Journal of Ethnopharmacology 110, 200–234.

Gelberg, B. H., 2007. Pathology of organ systems: Alimentary system. In: Pathologic Basis of Veterinary Diseases. (Edited by McGavin MD and Zachary JF) Mosby Elsevier 11830 West line Industrial Drive, St Louis, Mussolini 63146 Pp 301-391.

Geronikaki, A. A., Gavalas, A. M., 2006. Antioxidants and anti-inflammatory Diseases: synthetic and natural antioxidants with anti-inflammatory activity. Combinatorial chemistry and High Throughput Screening 9, 425-442.

Gertsch, J., Viverose-Paredes, J. M., Taylor, P., 2010. Plant immunostimulants—Scientific paradigm or myth?. Journal of Ethnopharmacology xxx, xxx–xxx.

Giess, W., Snyman, J. W., 1986. The naming and utilization of plant life by the Zu'hoasi Bushmen of the Kau-Kauveld. In: Vossen, R., Keuthmann, K. (Eds.), Contemporary Studies on Khoisan I and II. In honour of Oswin Köhler on the Occasion of His 75th Birthday. Buske, Hamburg, pp. 237–346.

Gilani, A. H., Bashir, S., Janbaz, K. H. and Khan, A., 2005a. Pharmacological basis for the use of *Fumaria indica* in constipation and diarrhoea. Journal of Ethnopharmacology 96, 585–589.

Gilani, A. H., Bashir, S., Jambaz, K. H., Shah, A. J., 2005b. Presence of cholinergic and calcium channel blocking activities explains the traditional use of *Hibiscus rosasinensis* in constipation and diarrhoea. Journal of Ethnopharmacology 102, 289–294.

Gilani, A. H., Bashir, S., Jambaz, K. H., Shah, A. J., 2005. Presence of cholinergic and calcium channel blocking activities explains the traditional use of *Hibiscus rosasinensis* in constipation and diarrhoea. Journal of Ethnopharmacology 102, 289–294.

Gilani, A. H., Rahman, A., 2005. Trends in Ethnopharmacology. Journal of Ethnopharmacology, 100, 43–49.

Godfraind, T., Miller, R., Wibo, M., 1986. Calcium antagonism and calcium entry blockade. Pharmacological Reviews 38, 321–416.

Goncalves, J. L., Lopes, R. C., Oliviera, D. B., Costa, S. S., Miranda, M. M., Romanos, M. T., Santos, N. S., Wigg, M. D., 2005. *In vitro* anti-rotavirus activity of some medicinal plants used in Brazil against diarrhea. Journal of Ethnopharmacology 99, 403–407.

Gonzalez, A. G., Bazzocchi, I. L., Moujir, L., Jimenez, I. A., 2000. Ethnobotanical uses of Celastraceae: Bioactive metabolites studies. Natural Products Chemistry 23, 649-738.

Gorowara, S., Sapru, S., Ganguly, N. K., 1998. Role of intracellular second messengers and ROS in the pathophysiology of *V. Cholerae* 0139 treated rabbit ileum. Biochimica Biophysic Acta 1407, 21–30.

Gould, M., Sellin, J. H., 2009. Diabetic diarrhea. Current gastroenterology reports 11950, 354-359.

Granot, E., Kohen, R., 2004. Oxidative stress in childhood-in health and disease states. Clinical Nutrition 23, 3–11.

Granum, E. P., 2006. Bacterial toxins as food poisons: Clinical, immunological aspects and applications of Bacterial protein toxins: The comprehensive sourcebook of Bacterial protein toxins (Ed. Alouf and Popoff) Pp. 949-958.

Greca, M. D., Manaco, P., Previtera, L., 1990. Stagmasterol from *Typa latifolia*. Journal of Natural Products, 53, 1430–1435.

Green, D. R., Reed, J. C., 1998. Mitochondria and apoptosis. Science 281, 1309– 1312.

Green, E., Samie, A., Obi, C. L., Bessong, P. O., Ndip, R. N., 2010. Inhibitory properties of selected South Africa medicinal plants against *Mycobacterium tuberculosis.* Journal of Ethnopharmacology 130, 151-157.

Greenwood, D. (ed.) 1989. Antibiotic sensitivity testing. In: Antimicrobial Chemotherapy. Oxford University, Oxford, p.91-100.

Griendling, K. K., 2005. ATVB in focus: redox mechanisms in blood vessels. Arterios Thrombotic and Vascular Biol. 25, 272–273.

Grierson, D. S., Afolayan, A. J., 1999. An ethnobotanical study of plants used for the treatment of wounds in the Eastern Cape, South Africa. Journal of Ethnopharmacology 67, 327–332.

Groschwitz, K. R., Hogan, S. P., 2009. Intestinal barrier function: Molecular regulation and disease pathogenesis. Journal of Allergy and Clinical Immunology 124, 3–20 quiz 21–22.

Grosser, T., Fries, S., FitzGerald, G. A., 2006. Biological basis for the cardiovascular consequences of COX-2 inhibition: Therapeutic challenges and opportunities. Journal of Clinical Investigation 116, 4-15.

Guerrant, R. L., Oria, R., Bushen, O. Y., Patrick, P. D., Houpt, E., Lima, A. A. M., 2005. Global impact of diarrhoeal diseases that are sampled by Traveller: The rest of the Hippopotamus. Clinical Infectious Diseases 4, 5524-5530.

Guerrant, R. L., Steiner, T. S., Lima, A. A. M., Bobak, D. A., 1999, How Intestinal Bacteria Cause Disease. The Journal of Infectious Diseases 179(2), S331-S337.

Gupta, S., Ali, M., Alam, M. S., Niwa, M., Sakai, T., 1992. 2, 4 β-Ethylcholest-4-en-3β-ol from the roots of *Lawsonia inermis*. Phytochemistry 31, 2558–2560.

Gupta, T. P., Ehrinpreis, M. N., 1990. Candida-associated diarrhea in hospitalized patients. Gastroenterology 98, 780–785.

Gutierrez, R. M. P., Mitchell, S., Solis, R. V., 2008. *Psidium guajava*: A review of its traditional uses, phytochemistry and pharmacology. Journal of Ethnopharmacology 117, 1–27

Gutierrez, S. P., Sanchez, M. A. Z., Gonzalez, C. P., Garcia, L. A., 2007. Antidiarrhoeal activities of different plants used in traditional medicine. African Journal of Biotechnology 6(25), 2988-2994.

Gutteridge, J.M.C., 1988. Lipid peroxidation: some problems and concepts, in: B. Halliwell, (Ed.), Oxygen Radicals and Tissue Injury. FASEB, Bethesda, MD, pp. 9–19.

Guttman, J. A., Finlay, B. B., 2008. Subcellular alterations that lead to diarrhea during bacterial pathogenesis. Trends in Microbiology 16(11), 535-542.

Guttman, J. A., Samji, F.N., Li, Y., Vogl, A. W., Finlay, B. B., 2006. Evidence that tight junctions are disrupted due to intimate bacterial contact and not inflammation during attaching and effacing pathogen infection in vivo. Infections and Immunology 74, 6075–6084.

Ha, D. T., Kim, H., Thuong, P. T., Ngoc, T. M., Lee, I., Hung, N. D., Bae, K., 2009. Antioxidant and lipoxygenase inhibitory activity of oligostilbenes from the leaf and stem of *Vitis amurensis*. Journal of Ethnopharmacology 125, 304–309.

Ha, T. J., Kubo, I., 2005. Lipoxygenase Inhibitory Activity of Anacardic Acids. Journal of Agricultural and Food Chemistry 53(11), 4350-4354.

Haeggström, J. Z., Rinaldo-Matthis, A., Wheelock, C. E., Wetterholm, A., 2010. Advances in eicosanoid research, novel therapeutic implications. Biochemical and Biophysical Research Communications 396, 135–139.

Halliwell, B., 1997. Antioxidants and human disease: a general introduction. Nutrition Reviews 55, 544-552.

Halliwell, B., 2008. Are polyphenols antioxidants or pro-oxidants? What do we learn from cell culture and in vivo studies? Archives of Biochemistry and Biophysics 476, 107–112.

Halliwell, B., Gutteridge, J. M., 1990. Role of free radicals and catalytic metal ions in human disease: an overview. Methods in Enzymology. 186, 1–85.

Hamza, O. J. M., van den Bout-van den Beukel, C. J. P., Mates, M. I. N., Moshi, M. J., Mikx, F. H. M., Selemani, H. O., Mbwambo, Z. H., Van der Van, A. J. A. M., Verweij, P. E., 2006. Antifungal activity of some Tanzania plants used traditionally for the treatment of fungal infection. Journal of Ethnopharmacology 108, 124-132.

Han, T., Li, H-L., Zhang, Q-Y., Han, P., Zheng, H-C., Rahman, K., Qin, L-P., 2007. Bioactivity guided fraction for antinflammatory and analgesic properties and constituent of *Xynthium strumarium* .L. Phytomedicine, 14(12), 825-829.

Havagiray, R., Ramesh, C., Sadhna, K., 2004. Study of antidiarrhoeal activity of *Calotropis gigantea* r.b.r. in experimental animals. Journal of Pharmacology and Pharmaceutical Science 7, 70–75.

Havsteen B. H., 2002. The biochemistry and medical significance of the flavonoids. Pharmacology and Therapeutics 96, 67–202 Sci. 57, 6–15.

Heimler, D., Vignolini, P., Dini, M. D., Vincieri, F. F., Romani, A., 2006. Antiradical activity and polyphenol composition of local Brassicaceae edible varieties. Food Chemistry, 99, 464-469.

Henry-Stanley, M. J., Hess, D. J., Erickson, E. A., Garni, R. M., Wells, R. M., 2003. Effect of Lipopolysaccharide on Virulence of Intestinal *Candida albicans.* Journal of Surgical Research 113, 42–49.

Hermon-Taylor, J., 2006. Gut pathogens: Invaders and turncoats in a complex cosmos. Gut pathogens 1:3 *hppt:/www.gutpathogen.com/content/1/1/3*

Hodges, K., Gill, R., 2010. Infectious diarrhea Cellular and molecular mechanisms. Gut Microbes 1, 4-21.

Hofmann, A. F., 1977. Bile acids, diarrhea, and antibiotics: data, speculation, and a unifying hypothesis. Journal Infectious Diseases 135(supplement), S126–S132.

Holxzapfel, C., Van Wyk, B., Castro, A., Marias, W., Herbst, M., 1995. A Chemotaxonomic Survev of Kaurene Derivatives in the Genus *Alepidea* (Apiaceae). *Biochemikal .Qstematics and Ecology,* Vol. *23, No. 718, pp. 799-803.*

Holzer, P. 2004. Gastrointestinal afferents as targets of novel drugs for the treatment of functional bowel disorders and visceral pain. European Journal of Pharmacology 429, 177–193.

Homans, A. L., Fuchs A., 1970. Direct biautography on thin layer chromatograms as a method for detecting fungitoxic substances. Journal of Chromatography 51, 327–329.

Hoogerwerf, W. A., 2006. Prokineticin 1 inhibits spontaneous giant contractions in the murine proximal colon through nitric oxide release. Neurogastroenterology and Motility 18, 455–463.

Hopkins, M. J., Macfarlane, G. T., 2003. Nondigestible oligosaccharides enhance bacterial colonization resistance against *Clostridium difficile* in vitro. Applied and Environmental Microbiology 69, 1920–1927.

Hostettmann, K., Marston, A., 2002. Twenty years of research into medicinal plants: Results and perspectives. Phytochemistry Review1, 275-285.

Hostettmann, K., Terreaux, C., Marston, A., Potterat, O., 1997. The role of planar chromatography in the rapid screening and isolation of bioactive compounds from medicinal plants. Journal of Planar Chromatography-Mod. TLC, 10, 251–257.

Hostettmann-Kaldas, M., Nakanishi, K., 1979. Moronic acid, a simple triterpenoids keto acid with antimicrobial activity isolated from *Ozoroa mucronata*. Planta Medica 37(4), 358-360.

Hou, W., Li, Y., Zhan, Q., Wei, X., Peng, A., Chen, L., Wei, Y., 2009. Triterpene Acids Isolated from *Lagerstroemia speciosa* Leaves as α-Glucosidase Inhibitors. Phytother. Res. 23, 614–618

Hu, L., Tall, B. D., Curtis, S. K., Kopecko, D. J., 2008. Enhanced microscopic definition of *Campylobacter jejuni* 81-176 adherence to, invasion of, translocation across, and exocytosis from polarized human intestinal Caco-2 cells. Infection and Immunity 76(11), 5294–5304.

Hutchings, A., Scott, A. H., Lewis, G., 1996. Zulu Medicinal Plants: An Inventory. University of Natal Press, Durban, p. 266–267.

Huycke, M. M., Moore, D. R., 2002. *In vivo* production of hydroxyl radical by *enterococcus faecalis* colonizing the intestinal tract using aromatic hydroxylation. Free Radical Biology & Medicine, 33(6), 818–826.

Imanishi, K., 1993. Aloctin A, an active substance of *Aloe arborescens* Miller as an immunomodulator. Phytotherapy Research, 7(7), S20-S22.

Iwalewa, E. O., McGaw, L. J., Naidoo, V., Eloff, J. N., 2007. Inflammation: the foundation of diseases and disorders. A review of phytomedicines of South African origin used to treat pain and inflammatory conditions. African Journal of Biotechnology 6 (25), 2868-2885.

Iwalokun, B. A., Gbenle, G. O., Adewole, T. A., Akinsinde, K. A., 2001. Shigellocidal properties of three Nigerian medicinal plants: *Ocimum gratissimum, Terminalia avicennoides*, and *Momordica balsamina*. Journal of Health, Population and Nutrition 19(4), 331-335.

Jager, A. K., Van Staden, J., 2005. Cyclooxygenase inhibitory activity of South African plants used aganist inflammation. Phytochemistry Review 4, 39-46.

Jay, J. M., 1996. Modern Food Microbiology 5th edn New York, NY: Chapman and Hall.

Jeller, A. H., Silva, D. H. S., Liao, L. M., Bolzani, V. S., Furlan, M., 2004. Phytochemistry 65, 1977.

Johns, T, Faubert, G. M., Kokwaro, J. O., Muhunnah, R. L. A., Kimanam, 1995. Anti-giardial activity of gastrointestinal remedies of the Luo of East African. Journal of Ethnopharmacology 46, 17-23.

Johnson, A. M., Kaushik, R. S., Hardwidge, P. R., 2010. Disruption of transepithelial resistance by enterotoxigenic *Escherichia coli*. Veterinary Microbiology 141, 115-119.

Jordan, S. A., Cunningham, D. G., Marles, R. J., 2010. Assessment of herbal medicinal products: challenges, and opportunities to increase the knowledge base for safety assessment, Toxicol. Ogy and Appl. ied Pharmacol. ogy 243 (2010) 198–216.

Joseph, C. C., Moshi, M. J., Innocent, E., Nkunya, M. H. H., 2007. Isolation of a Stilbenes Glucoside and Other constituent of *Terminalia sericea*. African Journal of Traditional and Complementary, Alternative Medicine, 4(4), 383-386.

Kaikabo, A. A., Suleiman, M. M., Samuel, B. B., Eloff, J. N., 2008. Antibacterial activity of eleven South African plants use in treatment of diarrhoea in folkloric medicine. African Journal of Traditional, Complementary and Alternative Medicine 5, 315–316.

Kamatou, G. P. P., Viljoen, A. M., Steenkamp, P., 2010. Antioxidant, anti-inflammatory activities and HPLC analysis of South African Salvia species. Food Chemistry 119, 684–688.

Kane, A. B., 1996. Mechanisms of Cell and Tissue Injury. In: Cellula and Molecular Pathogenesis. Editor, Alphonse E. Sirica: Lippincott-Raven Publishers, 277 East Washington Square, Philadelphia, Pennsylvania 19106-3780 Pp 1-22.

Katerere, D. R., Gray, A. I., Nash, R. J., Waigh, R. D., 2003. Antimicrobial activity of pentacyclic triterpenes isolated from African Combretaceae. Phytochemistry 63, 81-88.

Katsoulis, L. C., Veale, D. J. H., Havlik, I., 2000. The pharmacological action of *Rhoicissus tridentata* on isolated rat uterus and ileum. Phytotherapy 14(6), 460-462.

Kaviarasan, S., Naik, G. H., Gangabhagirathi, R., Anuradha, C. V., Priyadarsini, K. I., 2007. In vitro studies on antiradical and antioxidant activities of fenugreek (Trigonella foenum graecum) seeds. Food Chemistry 103, 31–37.

Kayser, O., Kolodziej. H., 1997. Antibacterial activity of extracts and constituent of *Pelargonium sidoides* and *Pelargonium reniforme* Curtis

Kayser, O., Kolodziej. H., Kiderlen, A. F., 2001. Immunomodulatory principle of *Pelargonium sidoides*. Phytotherapy Research 15(2), 122-126.

Kehrer, J. P., Biswal, S. S., 2000. The molecular effects of acrolein. Toxicological Sciences 57, 6–15.

Kenny, J. M., Kelly, P., 2009. Protozoal gastrointestinal infections. Medicine 39, 599-602.

Kermanshai, R., McCamy, B. E., Rosenfeld, J., Summers, P. S., Weretilnyk, E. A., Sorger, G. J., 2001. Benzyl isothiocyanate isthe chief or sole anthelmmintic Papaya seed extracts. Phytochemistry 57(3), 427-435.

Khajuria, A., Gupta, A., Garai, S., Wakhloo, B. P., 2007. Immunomodulatory effects of two sapogenins 1 and 2 isolated from *Luffa cylindrica* in Balb/C mice. Bioorganic and Medicinal Chemistry Letters 17, 1608–1612.

Khaled, M. A., 1994. Oxidative stress in childhood malnutrition and diarrheal disease. Journal of Diarrheal Disease Research 12, 165–72.

Kim, H. S., 2009. 5-Hydroxytryptamine 4 receptor agonists and colonic motility. Journal of Smooth Muscle Research 45, 25–29.

Kinghorn, A. B., Chai, H-B., Sung, C-K., Keller, W-J., 2011. The classical drug discovery approach to defining bioactive constituents of botanicals. Fitoterapia 82, 71-79.

Kishida, E., Tokumaru, S., and Ishitani, Y., 1993. Comparison of the formation of malondialdehyde and thiobarbituric acid reactive substances from autoxidized fatty acids based on oxygen consumption. Journal of Agricultural and Food Chemistry, 41, 1598-1600.

Koduru, S., Grierson, D. S., Afolayan, A. J., 2006. Antimicrobial activity of *Solanum aculeastrum.* Pharmaceutical Biology 44(4), 283-286.

Koduru, S., Grierson, D. S., Van der Venter, M., Afolayan, A. J., 2007: Anticancer activity of steroid alkaloids isolated from *Solanum aculeastrum*. Pharmaceutical Biolog 45(8), 613-618.

Koff, R. S., 1992. Clinical manifestation and diagnosis of hepatitis A virus infection. Vaccine 10, S15-S17.

Koff, R. S., 1998. Hepatitis A. Lancet 341, 1643–1649.

Komane, B. M., Olivier, E., Alvaro, I. Viljoen, M., 2011. Trichilia emetica (Meliaceae) – A review of traditional uses, biological activities and Phytochemistry. Phytochemistry Letters 4, 1–9.

Koopmans, M., 2008. Progress in understanding norovirus epidemiology. Current Opinion on Infectious Diseases 21, 544–552.

Kosar, M., Bozan, B., Temelli, F., Baser, K. H. C., 2007. Antioxidant activity and phenolic composition of sumac (*Rhus coriaria* L.) extracts. Food Chemistry 103, 952-959.

Kougan, G. B., Miyamoto, T., Mirjolet, J-F., Duchamp, O., Sondengam, B. L., Lacaille-Dubios, M-A., 2009. Arboreasides A-E, Triterpene Saponins from the Bark of *Cussonia arborea*. Journal of Natural Products 72, 1081–1086.

Krakauer, T., Li, B. Q., Young, H. A., 2001. The flavonoids baicalin inhibits superantigens-induced inflammatory cytokines and chemokines. Federation of European Biochemical Societies Letter 500, 52-55.

Krishnaiah, D., Sarbatly, R., Nithyanandam, R., 2011. A review of the antioxidant potential of medicinal plant species. food and bioproducts processing 89, 217–233.

Kubo, I., Kim, M., Naya, K., Komatsu, S., Yamagiwa, Y., Ohashi, K., Sakamoto, Y., Hirakawa, S., Kamikawa, T., 1987. Prostaglandin synthetase inhibitors from the African medicinal plant" *Ozoroa mucronata*. Chemistry letters, 1101-1104.

Kuete, V. Ngameni, B., Fotso Simo, C. C., Kengap Tankeu, R., Tchaleu Ngadjui¸ B., Meyer d, N., Lall, J. J. M., Kuiate, J. R., 2008. Antimicrobial activity of the crude extracts and compounds from *Ficus chlamydocarpa* and *Ficus cordata* (Moraceae). Journal of Ethnopharmacology 120, 17–24.

Kuete, V., Krusche, B., Youns, M., Voukenga, I., Fankam, A. G., Tankeo, S., Lacmata, S., Efferth, T., 2011. Cytotoxicity of some Cameroonian spices and selected medicinal plant extracts. Journal of Ethnopharmacology 134, 803–812.

Kuete, V., Nana, F., Ngameni, B., Mbaveng, A. T., Keumedjio, F., Chaleu Ngadjui, B. T., 2009. Antimicrobial activity of the crude extract, fractions and compounds from stem bark of *Ficus ovata* (Moraceae). Journal of Ethnopharmacology 124, 556–561.

Kunkel, S. L., Lukacs, N., Strieter, R. M., 1996. Cytokines and Inflammatory disease. In: Cellula and Molecular Pathogenesis. Editor, Alphonse E. Sirica: Lippincott-Raven Publishers, 277 East Washington Square, Philadelphia, Pennsylvania 19106-3780 Pp 23-36.

Kunle, O. O., Shittu, A., Nasipuri, R. N., Kunle, O. F., Wambembe, C., Akah, P. A., 1999. Gastrointestinal activity of *Ficus sur*. Fitoterapia 70(6), 542-547.

Lajubutu, B. A., Pinney, R. L., Roberts, M. F., Odelola, H. A., Oso, B. A., 1995. Antibacterial activities of diosquinone and plumbagin from the root of *Diospyros mespiliformis* (Hostch) (Ebenaceae). Phytotherapy Research, 9(5), 346-350.

Lall, N., Meyer, J. J. M., 2001. Inhibition of drug-sensitive and drug-resistant strains of *Mycobacterium tuberculosis* by Diospyrin, isolated from *Euclea natalensis*. Journal of Ethnopharmacology 78(2-3), 213-216.

Laohachai, K. N., Bahadi, R., Hardo, M. B., Hardo, P. G., Kourie, J. I., 2003. The role of bacterial and non-bacterial toxins in the induction of changes in membrane transport: implications for diarrhea. Review: Toxicon 42, 687–707.

Lansky, E. P., Newman, R. A., 2007. Review: *Punica granatum* (pomegranate) and its potential for prevention and treatment of inflammation and cancer. Journal of Ethnopharmacology 109, 177–206.

Lattanzio, V., Lattanzio, V. M. T., Cardinali, A., 2006. Role of phenolics in the resistance mechanisms of plants against fungal pathogens and insects. Phytochemistry: Advances in Research 23-67.

Lauwaet, T., Oliveira, M. J., Callewaert, B., De Bruyne, G., Mareel, M., Leroy, A., 2004. Proteinase inhibitors TPCK and TLCK prevent *Entamoeba histolytica* induced disturbance of tight junctions and microvilli in enteric cell layers in vitro. International Journal for Parasitology 34(7), 785–794.

Le Bouguenec, C., 2005. Adhesins and Invasins of pathogenic *Escherichia coli*. International journal of medical microbiology 295, 471-478.

Lee, C. W., Sarma, S. K., Singaram, C. Casper, M. A., 1997. Ca^{2+} channel blockage by verapamil inhibits GMCs and diarrhea during small intestinal inflammation. American Journal of Physiology 273, 785-794.

Lee, G. Y., Byeon, S. E., Kim, J. Y., Lee, J. Y., Rhee, M. H., Hong, S., Wu, C. J., Lee, H. S., Kim, M. J., Cho, D. H., Cho, J. Y., 2007a. Immunomodulating effect of *Hibiscus cannabinus* extract on macrophage functions. Journal of Ethnopharmacology 113, 62-71.

Lee, H. M., Lee, J. M., Jun, S. H., Lee, H. S., Kim, W. N., Lee, J. H., Ko, N. Y., Mun, S. H., Kim, B. K., Lim, B. O., Choi, D. K., Choi, W. S., 2007b. The anti-inflammatory effects of *Pyrolae herba* extract through the inhibition of the expression inducible nitric oxide synthase (iNOS) and NO production. Journal of Ethnopharmacology 112, 49-54.

Lee, J., Durst, R. W., Wrolstad, R. E., 2005. Determination of Total Monomeric Anthocyanin pigment content of fruit juices, Beverages, Natural colourants, and Wines by the pH differential method: Collaborative study. Journal of AOAC International 88, 1269-1278.

Lee, J., Rennaker, C., Wrolstad, R. E., 2008. Correlation of two anthocyanin quantification methods: HPLC and spectrophotometric method. Food Chemistry 110, 782-786.

Lee, S.H., Oe, T., Blair, I.A., 2001. Vitamin C-induced decomposition of lipid hydroperoxides to endogenous genotoxins. Science 292, 2083–2086.

Lengsfeld, C., Faller, G., Hansel, A., 2007. Okra polysaccharides inhibit adhesion of *Campylobacter jejuni* to mucosa isolated from poultry *in vitro* but not *in vivo.* Animal Feed Science and Technology 135, 113–125.

Levine, J., Dykoski, R. K., Janoff, E. N., 1995. Candida-Associated Diarrhea: A Syndrome in Search of Credibility. Clinical Infectious Diseases 21 (4), 881-886.

Lewu, F. B., Afolayan, A. J., 2009. Ethnomedicine in South Africa: The role of weedy species. African Journal of Biotechnology 8 (6), 929-934.

Li, Y., Trush, M. A., 1994. Reactive oxygen dependent DNA damage resulting from the oxidation of phenolic compounds by a copper redox cycle. Cancer Research 54,1895s-1898s.

Lin, C-N., Haung, A-M., Lin, K-W., Hour, T-C., Ko, H-H., Yang, S-C., Pu, Y-S., 2010. Xanthine oxidase inhibitory terpenoids of *Amentotaxus formosana* protect cisplatin-induced cell death by reducing reactive oxygen species (ROS) in normal human urothelial and bladder cancer cells. Phytochemistry 71, 2140–2146.

Lin, J., Opoku, A. R., Geheeb-Keller, M., Hutchings, A. D., Terblanche, S. E., Jager, A. K., van Staden, J., 1999. Preliminary screening of some traditional Zulu medicinal plants for anti-inflammatory and anti-microbial activities. Journal of Ethnopharmacology 68, 267–274.

Lin, J., Puckree, T., Mvelase, T. P., 2002. Anti-diarrhoeal evaluation of some medicinal plants used by Zulu traditional healers. Journal of Ethnopharmacology 79(1), 53-6.

Lindsey, K. L., Motsei, M. L., Jager, A. K., 2002. Screening of South African food plants for anti oxidant activity. Journal of Food Science 64, 2129–2931.

Linscott, A. J., 2011. Food-borne illnesses. Clinical Microbiology Newsletter 33, 41-45.

Lis-Balchin, M., Hart, S., Simpson, E., 2001. Buchu (*Agathosma betulina, Agathosma crenulata* (Rutaceae)) essential oils: their pharmacological activity on guinea pig ileum and antimicrobial activity on microorganism. Journal of Pharmacy and Pharmacology 53(4), 579-582.

Liu, Y., Abreu, P., 2006. Tirucallane triterpenes from the roots of Ozoroa insignis. Phytochemistry67,1309–1315.

Lode, H, 2010. Safety and Tolerability of Commonly Prescribed Oral Antibiotics for the Treatment of Respiratory Tract Infections. The American Journal of Medicine 123, S26-S38.

Lorrot, M., Vasseur, M., 2007. How do the rotavirus NSP4 and bacterial enterotoxins lead differently to diarrhea? Virology Journal 4, 31

Lourens, A. C. U., Van Vuuren, S. F., Viljoen, A. M., Van Herdeen, F. R., 2011. Antimicrobial activity and in vitro cytotoxicity of selected South African *Helichrysum* species. South African Journal of Botany, 77(1), 229-235.

Lourens, A. C. U., Viljoen, A. M., van Heerden, F. R., 2008. South African *Helichrysum* species: A review of the traditional uses, biological activity and phytochemistry. Journal of Ethnopharmacology 119, 630–652.

Lund, T., DeBuyser, M. L., Granum, P. E., 2000. A new cytotoxin from *Bacillus cereus* that may cause necrotic enteritis. Molecular Microbiology 38, 254–261.

Luseba, D., Elgorashi, E. E., Ntloedibe, B. T., Van Staden, J., 2007. Antibacterial, anti-inflammatory and mutagenic effects of some medicinal plants used in South Africa for the treatment of wounds and retained placenta in Livestock. South African Journal of Botany 73, 378-383.

Luseba, D., Van der Merwe, D., 2006. Ethnoveterinary medicine practices among Tsonga speaking people of South Africa. Onderstepoort Journal of Veterinary Research 73, 115–122.

Lutterodt, G. D., Ismail, A., Basheer, R. H., Baharuddin, M. H., 1999. Antimicrobial effects of *Psidium guajava* extracts as one mechanism of its antidiarrhea action. Malaysian Jouranl of medicinal Sciences. Makkar HPS, Francis G, Becker K. 2007: Bioactivity of phytochemicals in some lesser-known plants and their effects and potential applications in livestock and aquaculture production system. Animal 1(9), 1371- 1391, 17-20.

Lutterodt, G.D., 1992. Inhibition of Microlax-induced experimental diarrhoea with narcotic-like extracts of *Psidium guajava* leaf in rats. Journal of Ethnopharmacology 37, 51–157

Lyckander, I. M., Malterud, K. E., 1992. Lipophilic flavonoids from *Orthosiphon spicatus* as inhibitors of 15-lipoxygenase. Acta Pharmaceutica Nordica 4, 159–166.

Mabogo, D. E. N., 1990. The ethnobotany of the VhaVenda. M. Sc. dissertation, University of Pretoria.

MacNaughton, W. K., 2006. Mechanisms and Consequences of Intestinal Inflammation. Physiology of Gastrointestinal Tract, Fourth Edition, edited by Leonard R. Johnson. Academic Press.

Mahato, S. B., Kundu, A. P., 1994. 13C-NMR spectra of pentacyclic triterpenoids. A compilation and some salient features. Phytochemistry 37, 1517–1575.

Majhenic, L., Skerget, M., and Knez, Z., 2007. Antioxidant and antimicrobial activity of guarana seed extracts. Food Chemistry 104, 1258-1268.

Makhlouf, M. G., 1994. Neuromuscular function of the small intestine, In: Johnson, Leonard R. (Ed.), Physiology of the Gastrointestinal Tract, Third ed. Raven Press, New York, pp. 977–990.

Makkar, H. P. S., 2003. Quantification of tannins in tree and foliage- a laboratory manual. Klumer Academic Press Dordrecht, The Netherland.

Makkar, H. P. S., Francis G, Becker K. 2007. Bioactivity of phytochemicals in some lesser-known plants and their effects and potential applications in livestock and aquaculture production system. Animal 1(9), 1371- 1391.

Males, Z., Medic-Saric, M., 2001. Journal of Pharmacology and Biomedical Analysis 24 (2001) 353.

Mamphiswara, N. D., Mashela, P. W., Mdee, L. K., 2010. Distribution of total phenolics and antioxidant in fruit, leaf, stem and root of *Monsonia burkeana*. African Journal of Agricultural Research, 5(18), 2570-2575.

Mandal, S., Nayak, A., Kar, M., Banerjee, S. K., Das, A., Upadhyay, S. N., Singh, R. K., Banerji, A., Banerji, J., 2010. Antidiarrhoeal activity of carbazole alkaloids from *Murraya koenigii* Spreng (Rutaceae) seeds. Fitoterapia 81, 72-74.

Mansfield, L. S., Gajadhar, A. A., 2004. *Cyclospora cayetanensis* a food-and water-borne mcoccidian parasite. Veterinary Parasitology 126, 73–90.

Maregesi, S. M., Pieters, L., Ngassapa, O. D., Apers, S., Vingerhoets, R., Cos Paul, Berghe, Van den Dirk, A., Vlietinck, A. J., 2008. Screening of some Tanzanian medicinal plants from Bunda district for antibacterial, antifungal and antiviral activities. Journal of Ethnopharmacology 119, 58-66.

Marino, S. D., Gala, F., Borbone, N., Zollo, F., Vitali, S., Visioli, F., Lorizzi, M., 2007. Phenolic glycoside from *Foeniculum vulgare* fruit and evaluation of antioxidative activity. Phytochemistry 68(13), 1805-1812.

Marquez-Martin, A., Puerta, R. D. L., Fernandez-Arche, A., Ruiz-Gutierrez, V., Yaqoob, P., 2006. Modulation of cytokine secretion by pentacyclic triterpenes from olive pomace oils in human mononuclear cells. Cytokine, 36(5-6), 211-217.

Marston, A., 2011. Review: Thin-layer chromatography with biological detection in Phytochemistry. Journal of Chromatography A, 1218, 2676–2683.

Martinez-Augustin, O., Romero-Calvo, I., Suarez, M. D., Zarzuelo, A., and Sanohez de Medina, F., 2009. Molecular bases of impaired water and ion movement in inflammatory bowel diseases. Inflammatory Bowel Diseases 15, 114-127.

Masika, P. J., Afolayan, A. J., 2002. Antimicrobial activity of some plants used for the treatment of livestock disease in the Eastern Cape, South Africa. Journal of Ethnopharmacology 83, 129-134.

Masika, P. J., Sultana, N., Afolayan, A. J., 2004. Antibacterial activity of two flavonoids isolated from *Schotia latifolia*. Pharmaceutical Biology 42(2), 105-108.

Masoko, P., Picard, J., Eloff, J. N., 2005. Antifungal activities of six South African *Terminalia* species (Combretaceae). Journal of Ethnopharmacology 99, 301-308.

Masoko, P., Picard, J., Eloff, J. N., 2007. The antifungal activities of twenty-four Southern southern Africa *Combretum* species (Combretaceae).South African Journal of Botany 73, 173-183.

Mastroeni, P., Maskell, D., 2006. *Salmonella* infections: Clinical, immunological, and molecular aspects. Cambridge University Press.

Mathabe, M. C., Nikolova, R. V., Lall, N., Nyazema, N. Z., 2006. Antibacterial activities of medicinal plants used in the treatment of diarrhea disease in Limpopo Province, South Africa. Journal of Ethnopharmacology 105, 286-293.

Mativandlela, S. P. N., Lall, N., Meyer, J, J, M., 2006. Antibacteria, antifungal, antitubercular activityactivities of the root of *Pelargonium reniforme* Curtis and *Pelargonium sidoides* (DC) (Geraniaceae) root extract. South African Journal of Botany 72(2), 233-237.

Mativandlela, S. P. N., Meyer, J, J, M., Hussein, A. A., Houghton, P. J., Hamilton, C. J., Lall, N., 2008. Activity against *Mycobacterium smegmatis* and *Mycobacterium tuberculosis* by South African Medicinal plants. Phytotherapy Research 22(6), 841-845.

Matsui, M., Motomura, D., Fujikawa, T., Jiang, J., Takahashi, S., Manabe, T., Taketo, M.M., 2002. Mice lacking M2 and M3 muscarinic acetylcholine receptors are devoid of cholinergic smooth muscle contractions but still viable. The Journal of Neuroscience 22, 10627–10632.

Mattison, K., 2010. Norovirus as a food-borne disease hazard. Advances in Food and Nutrition Research 62, 1-39.

Matu, E. N., van Staden, J., 2003. Antibacterial and anti-inflammatory activity of some plants used for medical purposes in Kenya. Journal of Ethnopharmacology 87, 35-41.

Mbagwu, H. O. C., Adeyemi O. O., 2008. Anti-diarrhoeal activity of the aqueous extracts of *Mezoneuron benthamianum* Baill (Caesalpiniaceae) Journal of Ethnopharmacology 116, 16-20.

Mbatchi, S. F., Mbatchi, B., Banzouzi, J. T., Basmba, T., Nsonde Ntandou, G. F., Ouamba, J–M., Berry, A., Benoit-Vical, F., 2000. *In vitro* antiplasmodial activity of 18 plants used in Congo Brazzaville traditional medicine. Journal of Ethnopharmacology 104, 168-174.

McGaw, L. J., Eloff, J. N., 2008. Ethnoveterinary use of Southern African plants and scientific evaluation of their medicinal properties. Journal of Ethnopharmacology 119: 559–574.

McGaw, L. J., Jäger, A. K., van Staden, J., 2000. Antibacterial, anthelmintic and anti-amoebic activity in South African medicinal plants. Journal of Ethnopharmacology 72, 247–263.

McGaw, L. J., Jager, A. K., van Staden, J., 2002. Isolation of antibacterial fatty acids from *Schotia brachypetala*. Fitoterapia 73(5), 431-433.

McGaw, L. J., Rabe, T., Sparg, S. G., Jager, A. K., Eloff, J. N., van Staden, J., 2001. An investigation on the biological activity of *Combretum* species. Journal of Ethnopharmacology 75: 45–50.

McGaw, L. J., Van der Merwe, D., Eloff, J. N., 2007. In vitro anthelmintic, antibacterial and cytotoxic effects of extracts from plant used in South African ethnoveterinary medicine. The veterinary Journal 173, 366-372.

Meghashri, S., Vijar Kumar, S., Gopal, S., 2010. Antioxidant properties of aof novel flavonoids from leaves of *Leucas aspera*. Food Chemistry 122(1), 105-110.

Mello, D. L., ALves, A. A., Macedo, D. V., Kbota, L. T., 2005. Peroxidase-based biosensor as a tool for a fast evaluation of antioxidant capacity of tea. Food Chemistry 92, 515-519.

Michelangeli, F., Ruiz, M. C., 2003. Physiology and pathology of the gut in relation to viral diarrhoea. *Viral gastroenteritis*: U. Desselberger and J. Gray (Editors). Elservier Science BV. Pp 23-50.

Middleton, E., Jr., Kandaswami, C., and Theoharides, T. C., 2000. The effects of plant flavonoids on mammalian cells: Implications for inflammation heart disease and cancer. Pharmacology Reviews, 52(4), 673–751.

Miliauskas, G., van Beek, T. A., de Waard, P., Venskutonis, R. P., and Sudholter, E. J. R. 2005. Identification of radical scavenging compounds in Rhaponticum carthamoides by means of LC-DADSPE- NMR. Journal of Natural Products, 68(2), 168–172.

Mishra, A., Kumar, A., 2000. Medicinally important trees of Rajasthan. International Journal of Mendel 1–8, 37–38.

Mlambo, N. P., 2008. The screening of medicinal plants traditionally used to treat diarrhoea, in Ongoye area, Kwazulu Natal. A dissertation submitted to the Faculty of Science at the University of Zululand in fulfillment of the requirement for the degree of Master of Science.

Mølgaard, P., Nielsen, S. B., Rasmussen, D. E., Drummond, R. B., Makaza, N., Andreassen, J., 2001. Anthelmintic screening of Zimbabwean plants traditionally used against schistosomiasis. Journal of Ethnopharmacology 74, 257–264.

Molla, A., Viljoen, A. M., 2008. Buchu- *Agathosma betulina* and *Agathosma crenulata* (Rutaceae): A Review. Journal of Ethnopharmacology 119: 413–419.

More, G., Tshikalange, T. E., Lall, N., Botha, F., Meyer, J. J. M., 2008: . Antimicrobial activity of medicinal plants against oral microorganisms. Journal of Ethnopharmacology, 119, 473–477.

Moshi, M. J., Mbwambo, Z. H., 2005. Some pharmacological properties of extract of *Terminalia sericea* roots. Journal of Ethnopharmacology 97(1), 43-47.

Mosmann, T., 1983. Rapid colorimetric assay for cellular growth and survival: application to proliferation and cytotoxicity assays. Journal of Immunological Methods 65, 55–63.

Motlhanka, D. M. T., 2008. Free radical scavenging activity of selected medicinal plants of Eastern Botwana. Pakistan Journal of Biological Sciences 11(5), 805-808.

Moundipa, P. F., Flore, K. G. M., Bilong Bilong, C. F., Bruchhau, I., 2005. In vitro amoebicidal activity of some medicina plants of the Bamu region (Cameroon). African Journal of Traditional and Complimentary Medicine 2(2), 113-121.

Moure, A., Cruz, J. M., Franco, D., Dominquez, J. M., Sineiro, J., Dominquez, H., Nunez, M. J., and Parajo, J. C., 2001. Natural antioxidant from residual sources. Food Chemistry 72, 145-171.

Mueller, C.F., Laude, K., McNally, J.S., Harrison, D.G., 2005. ATVB in focus: redox mechanisms in blood vessels. Arterioscler. Thromb. Vasc. Biol. 25, 274–278.

Muhammed, I., El-Sayed, K. A., Mossa, J. S., Al-Said, M. S., El-Feraly, F. S., Clark, A. M., Hufford, C. D., Oh, S., Mayer, A. M. S., 2000. Bioactive 12-Olaenene triterpene and secotriterpene acids from *Maytenus undata.* Journal of Natural Products 63, 605-610.

Mulaudzi, R. B., Ndhalala, A. R., Kulkarni, M. G., Finnie, J. F., Van Staden, J., 2011. Antimicrobial properties and phenolic contents of medicinal plants used by Venda people for conditions related to venereal diseases. Journal of Ethnopharmacology, DIO: 10: 1016/J.jep2011.03.022.

Mulaudzi, R. B., Ndhlala, A. R., Finnie, J. F., Van Staden, J., 2009. Antimicrobial, anti-inflammatory and genotoxicity activity of *Alepidea amatymbica* and *Alepidea natalensis* (Apiaceae). South African Journal of Botany 75, 584–587.

Murata, T., Miyase, T., Muregi, F. W., Naoshima-Ishibashi, Y., Umshara, K., Warashina, T., Kanou, S., Mkoji, G. M., Terada, M., Ishih, A., 2008. Antiplasmodial triterpenoids from *Ekebergia capensis*, Journal of Natural Product 71, 167-174.

Murayama, T., Eizuru, Y., Yamada, R., Sadanari, H., Matsubara, K., Rukung, G., Tolo, F. M., Mungai, G. M., Kofi-Tsekpo, M., 2007. Anticytomegalovirus activity of pristimerin, a triterpenoids quinine methide isolated from *Maytenus heterophylla* (Eckl. & Zeyh.). Antiviral Chemistry and Chemotherapy 18(3), 133-139.

Mutanyatta, J., Bezabih, M., Abegaz, B. M., Dreyer, M., Brun, R., Kocher, N., Bringmann, G., 2005. The first 6'-O-sulfated phenylanthraquinones: Isolation from *Bulbine frutescens,* structural elucidation enantiomeric purity and partial synthesis. Tetrahedron 61, 8475-8484.

Muthaura, C. N., Rukunga, G. M., Chhabra, S. C., Omar, S. A., Guantai, A. N., Gathirwa, J. W., Tolo, F. M., Mwitari, P. G., Keter, L. K., Kirira, P. G., Kimani, C. W., Mungai, G. M., Njagi, E. N. M., 2007. Antimalarial activity of some plants traditionally used in treatment of malaria in Kwale district of Kenya. Journal of Ethnopharmacology 112, 545-551.

Naczk, M., Shahidi, F., 2004. Extraction and analysis of phenolics in food. Journal of Chromatography A, 1054, 95-111.

Naidoo, L. A. C., Drewes, S. E., Van Staden, J., Hutching, J., 1992. Exocarpic acid and other compounds from tubers and inflorescences of *Sarcaphyte sanguine*. Phytochemistry 31(11), 3929-3931.

Naidoo, V., McGaw, L. J., Bisschop, S. P. R., Duncan, N., Eloff, J. N., 2008. The value of plant extracts with antioxidant activity in attenuating coccidiosis in broiler chickens. Veterinary Parasitology 153, 215–219.

Naidoo, V., Zweygarth, E., Eloff, J. N., Swan, G. E., 2005. Identification of anti-babesial activity for four ethnoveterinary plants in vitro Veterinary Parasitology 130(1-2), 9-13, 2005.

Naidoo, V., Zweygarth, E., Swan, G. E., 2006. Determination and quantification of the in vitro activity of *Aloe marlothii* (A. Berger) subsp. *marlothii* and *Elephantorrhiza elephantina* (Burch.) skeels acetone extracts against *Ehrlichia ruminantium*. Onderstepoort Journal of Veterinary Research 73, 175–178.

Nanayakkara, N. P., Burandt, C. L. Jr., Jacob, M. R., 2002. Flavonoid with activity against methicilin-resistnt *Staphylococcus aureus* from *Dalea scandens* var. paucifolia. Planta medica 68, 519-522.

Nardi, G. M., Siqueira Junior, J. M., Monache Belle, F., Pizzolatti, M. G., Ckless, K., Ribeiro-do-Valle, R. M., 2007. Antioxidant and anti-inflammatory effects of products from *Croton celtidifolius* Bailon on carrageenan-induced pleurisy in rats. Phytomedicine 14, 115-122.

Nathan, C., 1992. Nitric Oxide as a secretory product of mammalian cells. *FASEB J*. 6: 3051-3064.

National Committee for Clinical Laboratory Standards (NCCLS), 2002. *Performance Standards for Antimicrobial Susceptibility testing.* Twelfth Information Supplement M100 - S12 NCCLS, Wayne.

Naz, S., Siddiqi, R., Ahmad, S., Rasool, S. A., Sayeed, S. A., 2007. Antibacterial activity directed isolation of compounds from *Punica granatum*. Journal of Food Science 72, M341–M345.

Ndamba, J., Nyazema, N., Makaza, N., Anderson, C., Kaondera, K. C., 1994. Traditional herbal remedies used for the treatment of urinary schistosomiasis in Zimbabwe. [Comparative Study] Journal of Ethnopharmacology 42(2), 125-32

Ndawonde, B. G., Zobolo, A. M., Dlamini, E. T., Siebert, S. J., 2007. A survey of plants sold by traders at Zululand muthi markets, with a view to selecting popular plant species for propagation in communal gardens. African Journal of range and Forage Siecence 42(2), 103-107(5).

Ndhlala, A. R., Finnie, F. R., Van staden, J., 2010. Plant composition, Pharmacological properties and mutagenic evaluation of commercial Zulu herbal mixture: *Imbiza ephuzwato*. Journal of Ethnopharmacology 133(2), 663-674.

Neish, A. S., 2009. Microbes in Gastrointestinal Health and Disease. Gastroenterology 136, 65–80.

Nergard, C. S., Diallo, D., Michealsen, T. E., Malteru, K. E., Kiyohara, H., Matsumoto, T., Yamada, H., Paulsen, B. S., 2004. Isolation, partial characterization and immunomodulating activity of polysaccharides from *Vernonia kotschyana* Sch. Bip. Ex. Walp., Journal of Ethnopharmacology 91(1), 141-152.

Neuwinger, H. D., 1996. African ethnobotany: poisons and drugs: chemistry, pharmacology, toxicology. Chapman and Hall, Germany.

Nguemeving, J. R., Azebaze, A. G. B., Kuete, V., Carly, N. N. E., Beng, V. P., Meyer, M., Blond, A., Bodo, B., Nkengfack, A. E., 2006. Laurentixanthones A and B, antimicrobial xanthones from *Vismia laurentii*. Phytochemistry 67, 1341–1346.

Ngueyem, T. A., Brusotti, G., Caccialanza, G., Vita Finzi, P., 2009. The genus *Bridelia*: A phytochemical and ethnopharmacological review. Journal of Ethnopharmacology 124, 339–349.

Nhiem, N. X., Tai, B. H., Quang, T. H., Kiem, P. V., Minh, C. V., Nam, N. H., Kim, J-H., Im, L-R., Lee, Y-M., Kim, Y. H., 2011. A new ursane-type triterpenoid glycoside from *Centella asiatica* leaves modulates the production of nitric oxide and secretion of TNF-a in activated RAW 264.7 cells. Bioorganic & Medicinal Chemistry Letters 21, 1777–1781.

Nigam, S., Schewe, T., 2000. Phospholipase A2 and lipid peroxidation. Biochimie and Biophysics Acta 1488, 167–181.

Nissanka, A. P. K., Karunaratne, V., Bandara, B. M. R., Kumar, V., Nakanishi, T., Nishi, M., Inada, A., Tillekeratne, L. M. V., Wijesundara, D. S. A., Gunatilaka, A. A. L., 2000. Antimicrobial alkaloids from *Zanthophylum tetraspermum* and *caudatum*. Phytochemistry 56, 857-861.

Noreen, Y., Ringbom, T., Perera, P., Danielson, H., Bohlin, L., 1998. Development of a radiochemical Cyclooxygenase-1 and -2 in vitro assay for identification of natural products as inhibitors of prostaglandin biosynthesis. Journal of Natural Products 61, 2-7

Nose, K., 2000. Role of reactive oxygen species in regulation of physiological functions. Biological and Pharmaceutical Bulletin 22, 897-903.

Nyiredy, S. Z.; Glowniak, K., 2001. Planar chromatography in medicinal plant research. In Planar Chromatography; Nyiredy, Sz. Ed.; Springer Scientific Publisher: Budapest, Hungary 550.

O'Hara, S. P., Chen, X-M., 2011. The cell biology of *cryptosporidium Cryptosporidium* infection. Microbes and Infection xx, 1-10.

Oben, J. E., Assi, S. E., Agbor, G. A., Musoro, D. F., .2006. Effect of *Eremomastax speciosa* on experimental diarrhea. African Journal of Traditional Complimentary Alternative Med. 3(1), 95-100.

Obi, C. L., Potgieter, N., Bessong, P. O., Masebe, T., Mathebula, H., Molobela, P., 2003. In vitro antibacterial activity of Venda medicinal plants. South African Journal of Botany 69(2), 1-5.

Odhav, B., Kanasamy, T., Khumalo, N., Baijnath, H., 2010. Screening of African traditional vegetables for their alpha-amylase inhibitory effect. Journal of Medicinal Plant Research, 4(14), 1502-1507.

Ofek, I., Sharon, N., 1990. Adhesins as lectins: Specificity and role in infection. In: K, Jann B (eds) Bacterial capsules and adhesins: Fact and Principles. Current topic in Microbiology and Immunology. Vol 151, Berlin: Springer, 91-113.

Ogoina, D., Onyemelukwe, G. C., 2009. The role of infections in the emergence of non-communicable diseases (NCDs): Compelling needs for novel strategies in the developing world. Journal of Infection and Public Health 2, 14-29.

Ojewole, J. A. O., 2004. Evaluation of the Antidiabetic, Anti inflammatory and Antidiabetic properties of Sclerocarya birrea (A. Rich) Hochst. Stem bark aqueous Extract in Mice and Rats. Phytotherapy Research 18, 601-608.

Ojewole, J. A. O., 2005. Antinociceptive, antiinflammatory and antidiabetic effects of *Leonotis leonurus* (L) R. BR. [Lamiaceae] leaf aqueous extract in mice and rats. Methods and Findings in Experimental and Clinical Pharmacology 27, 257–264

Ojewole, J. A. O., 2006. Antinococeptive, anti-inflammatory and antidiabetic properties of *Hypoxis hemerocallidea* Fisch. and C. A. Mey.(Hypoxidaceae) Corm ('African potato') in mice and rats. Journal of Ethnopharmacology 103(1), 126-134

Ojewole, J. A. O., Awe, E. O., Nyinawumuntu, A., 2009. Antidiarrhoeal Activity of *Hypoxis hemerocallidea* Fisch. and C. A. Mey.(Hypoxidaceae) Corm ('African potato') Aqueous Extract in Rodents. Phytotherapy Research, 23, 965–971.

Ojewole, J. A. O., Mawoza, T., Chiwororo, W. D. H., Owira, P. M. O., 2010. *Sclerocarya birrea* (A. Rich.) Hochst. ['Marula'] (Anacardiaceae): a review of its phytochemistry, pharmacology and toxicology and its ethnomedicinal uses. Phytotherapy Research 24, 633–639.

Okokon, J. E., Ita, B. N., Udokpoh, A. E., 2006. The in vivo antimalarial activities of *Uvaria chamae* and *Hippocratea africana*. Annals of Tropical Medicine and Parasitology 100, 585–590.

Orabi, K. Y., Al-Qasoumi, S., El-Olemy, M. M., Mosaa, J. S., Muhammed, I., 2001. Dihydragarofuran alkaloid and triterpenes from *Maytenus hetrophylla* and *Maytenus arbutifolia*. Phytochemistry 58(3), 475-480.

Oskay, M., Oskay, D., Kalyoncu, F., 2009. Activity of some plants extracts against multi drug resistant human.pathogens. Iranian Journal of Pharmaceutical Research 8, 293-300.

Oskay, M., Sari, D., 2007. Antimicrobial screening of some Turkish medicinal plants. Pharmaceutical Biology 45(3), 176-181.

Ovenden, P. B., Yu, J., Bernays, J., Wanss Christophidis, L. J., Sberna, G., Tait, R. A., Wildman, H. G., Labeller, D., Lowther, J., Walsh, N. G., Meurer-Grimes, B. M., 2004. Physaloside A, an Acylated sucrose ester from *Physalis viscose.*

Owolabi, O. J., Omogbai, E. K. I., 2007. Analgesic and anti-inflammatory activities of the ethanolic stem bark extract of *Kigelia africana*) Bignoniaceae). African Journal of Biotechnology, 6(5), 582-585.

Owolabi, O. J., Omogbai, E. K. I., Obasuyi, O., 2007. Antifunal and antibacterial activities of the ethanolic and aqueous extracts of *Kigelia africana*) Bignoniaceae). African Journal of Biotechnology 6(14), 1677-1680.

Owolabi, O.J., Nworgu, Z. A., Odushu, K., 2010. Antidiarrhoeal evaluation of the eythanol extract of *Nauclea latifolia* root bark. Methods and Findings in Experimental and Clinical Pharmacology 32(8), 551-555.

Ozyurek, M., Bektasogu, B., Guclu, K., Apak, R., 2008. Hydroxyl radical scavenging assay of phenolics and flavonoids with a modified cupric reducing antioxidant capacity (CUPRAC) method using catalase for hydrogen peroxide degradation. Analytica Chimica Acta 616, 196–206.

Pallant, C. A., and Steenkamp, V., 2008. In-vitro bioactivity of Venda medicinal plants used in the treatment of respiratory conditions. Human & Experimental Toxicology 27, 859–866.

Palombo, E. A., 2006. Phytochemicals from traditional medicinal plants used in the treatment of diarrhoea: modes of action and effects on intestinal function. Phytotherapy Research 20, 717–724.

Palombo, E. A., 2006. Traditional plants and Herbal Remedies used in the treatment of Diarrhea Disease: Mode of action, Quality, Efficacy and Safety Consideration. In: Modern phytomedicine, turning medicinal plants into drugs. (Edited by Ahmed F Aqil and Owais M) WILEY-VCH Verlag GmbH and Co KGaA, Weinheim. Pp 248-269.

Panda, D., Patra, C. R., Nandi, S., Swarup, D., 2009. Oxidative stress indices in gastroenteritis in dogs with canine parvoviral infection. Research in veterinary science 86, 36-42.

Parekh, J., Chandra, S., 2007. Antibacterial and phytochemical studies on twelve species of Indian medicinal plants. *African* Journal of Biomedical Research 10, 175-181.

Parola, M., Bellomo, G., Robino, G., Barrera, G., Dianzani, M. U., 1999. 4- Hydroxynonenal as a biological signal: molecular basis and pathophysiological implications. Antioxidant and Redox Signalling 1, 255–284.

Pash, Y., Banks, M., Farthing, M., 2009. Causes and recommended management of acute diarrhoea. Prescriber, January, 16-34.

Pauli, G. F., Junior, P., 1995. Phenolic glucosides from *Adonis Aleppica.* Phytochemistry 38, 1245-1250.

Pavlick, K. P., Laroux, F. S., Fuseler, J., et al., 2002. Role of reactive metabolites of oxygen and nitrogen in inflammatory bowel disease. Free Radical Biol. ogy and Medicine. 33, 311–322.

Peluso, I., Campolongo, P., Valeri, L. R., Palmery, M., 2002. Intestinal motility disorder induced by free radicals: a new model mimicking oxidative stress in gut. Pharmacological Research 46 (6), 533-538.

Pendota, S. C., Yakubu, M. T., Grierson, D. S., Afolayan, A. J., 2010. Effect of administration of aqueous extracts of *Hippobromus pauciflorus* leaves in male Wistar rats. African journal of Traditional, Complimentary and Alternative Medicine 7(1): 40-46.

Pendota, S. C., Yakubu, M. T., Grierson, D. S., Afolayan, A. J., 2009. Antiinflammatory, analgesic, antipyretic activities of the aqueous extract of *Pippobromus puaciflorus* (L. F.) Radk leaves in Male Wistar rats. African Journal of Biotechnology, 8(10), 2036-2041.

Perez-Bosque, A. and Moreto, M., 2010. A rat model of mild intestinal inflammation induced by *Staphylococcus aureus* enterotoxins B. The 3rd International Immunonutrition Workshop held in Spain on 21-24 Oct., 2009. Proceedings of the Nutrition Society, 69, 447-453.

Petri Jr., W. A., Miller, M., Binder, H. J., Levine, M. M., Dillingham, R., Guerrant, R. L., 2008. Enteric infections, diarrhea, and their impact on function and development. Journal of Clinical. Investigation 118:1277–1290.

Pharoah, D. S., Varsan, H., Tathan, R. W., 2006. Expression of the inflammatory chemokines CCL5, CCL3 and CXCL10 in juvenile idiopathic arthritis and demonstration of CCL5 production by a typical subset of $CD8^{+}$T cells. Arthritis Research and Therapy 8, R50.

Picerno, P., Autore, G., Marzocco, S., Meloni, M., Sanago, R., Aquino, R. P., 2005. Anti-inflammatory activity of cutaneous irritation of cell cullins and reconstituted Human epidermis. Journal of Natural Products 68(11): 1610-1614.

Pietta, P. G., 2000. Flavonoids as antioxidants. Journal of Natural Products, 63, 1035–1042.

Pillai, N. R., 1992. Antidiarrhoeal activity of *Punica granatum* in experimental animals. Pharmaceutical Biology 30(3), 201-204.

Pillay. P., Maharaj, V. J., Smith, P. J., 2008. Investigating South African plants as a source of new antimalarial drugs. Journal of Ethnopharmacology 119, 438-454.

Podewils, L. J., Mintz, E. D., Nataro, J. P., Parashar, U. D., 2004. Acute, Infectious Diarrhoea Among Children in Developing Countries. Journal of seminars in Pediatric Infectious Diseases 155-168.

Polya, G. M., 2003. Biochemical Targets of Plant Bioactive Compounds. A Pharmacological Reference Guide to Sites of Action and Biological Effects. CRC Press, Florida.

Ponou, B. K., Barboni, L., Teponno, R. B., Mbiantcha, M., Nguelefack, T. B., Park, H-J., Lee, K-T., Taponjou, L. A., 2008. Polyhydrooleanane-type triterpenoids from *Combretum molle* and their anti-inflammatory activity. Phytochemistry letters 1(4), 183-187.

Pooley, E., 1998. A Field Guide to Wildflowers KwaZulu-Natal and the Eastern Region. Natal Flora Publications Trust, Durban.

Prior, R. L., Wu, X., Schaich, K., 2005. Standardized methods for the determination of antioxidant capacity and phenolics in foods and dietary supplements. Journal of Agriculture and Food Chemistry 53 (10), 4290–4302.

Prozesky, E. A., Meyer, J. J. M., Louw, A. L., 2001. In vitro antiplasmodial activity and cytotoxicity of ethnobotanically selected South African plants. Journal of Ethnopharmacology.76 (3), 81-308.

Pujol J., 1990. *Natur Africa: The Herbalist Handbook.*Natural Healers Foundation, Durban.

Puyvelde, V. L., De Kimpe, N., Costa, J., Munyjabo, V., Nyirankuliza, S., Hakizamungu, E., Schamp, N., 1989. Isolation of flavonoids and chalcone from *Helichrysum odoratissimum* and synthesis of Helichrysetin. Journal of Natural Product 52(3), 629-633.

Quais, E. Y., Elokda, A. S., Ghalyun, Y. Y. A., Abdullla, F. A., 2007. Antidiarrhoeal activity of the aqueous extract of *Punica granatum* (Pomegranate) peels. Pharmaceutical Biology 45(9), 715-720.

Rabe, T., Van Staden, J., 1997. Antibacterial activity of South African plants used for medicinal purposes. Journal of Ethnopharmacology 56, 81–87.

Raccach, M., 1984. The antimicrobial activity of phenolic antioxidant in foods: a review. Journal of Food Safety 6, 141-170.

Radi, Z. A., Khan, N. K., 2006. Effects of cyclooxygenase inhibition on the gastrointestinal tract. Experimental and Toxicological pathology 58, 163-173.

Ragone, M. I., Sella, M., Cornforti, P., Volonte, M. G., Consolini, A. E., 2007. The spasmolytic effect of *Aloysia citriodora*, Palau (South American cedron) is partially due to its vitexin but not isovitexin on rat duodenums. Journal of Ethnopharmacology 113, 258–266.

Rahman, I., Adcock, I. M., 2006. Oxidative stress and redox regulation of lung inflammation in COPD. European Respiratory Journal 28, 219-242.

Ralstron, K. S., Petri Jr., W. A., 2011. Tissue destruction and invasion by *Entamoeba histolytica*. Trends in Parasitology, 27, 253-262.

Ramahivhana, J. N., Moyo, S. R., Obi, C. I., 2010. The possible role of medicinal plants in tackling resistant microbial pathogens in Limpopo Province, South Africa. *Journal of Medicinal plant Research*, 4(11), 999-1002.

Ramaroa, N., Lereclus, D., 2006. Adhesion and cytotoxicity of *Bacillus cereus* and *Bacillus thuringiensis* to epithelial cells are FlhA and PlcR dependent, respectively. Microbes and Infection 8, 1483-1491.

Ramful, D., Bahorun, T., Bourdon, E., Tarnus, E., Aruoma, O. I., 2010. Bioactive phenolics and antioxidant propensity of flavedo extracts of Mauritian citrus fruits: Potential prophylactic ingredients for functional foods application. Toxicology xxx (2010) xxx–xxx.

Rao, V. S. N., Santos, F. A., Sobreika, T. T., Souza, M. F., Melo, L. L., Silveira, E. R., 1997. Investigations on the gastroprotective and antidiarrhea properties of ternatin, a tetramethoxyflavone from *Egletes viscose*. Planta Medica 63(2), 146-149.

Rasoanaivo, O., Ramanittrahasimbola, D., Rafatro, H., Rakotondramanana, D., Robijaona, B., Rakotozafy, A., Ratsimamanga-Urverg, S., Labaied, M., Grellier P., Allorge, L., Mambu, L., Frappier, F., 2004. Screening of extracts of Madagascan plants in search of antiplasmodial compounds, Phytotherapy Research, 18, 743-747.

Rasoanaivo, P., Ratsimamanga-Urverg, S., 1993. Biological Evaluation of Plants with Reference to the Malagasy Flora. Monograph for the IFS-NAPRECA Workshop on Bioassays, Antananarivo, Madagascar, pp 9–43, 72–83.

Rauha, J. P., 2001. The research for biological activity in Finnish plant extracts containing phenolic compounds, PhD Thesis, Pharmacognosy Department, Pharmacy Faculty of Science, University of Helsinki, pp. 31–45

Ravikumara, M., 2008. Investigation of chronic diarrhoea. Paediatrics and Child health 18(10), 441-447.

Re, R., Pellegrini, N., Proteggente, A., Pannala, A., Yang, M., Rice-Evans, C., 1999. Antioxidant activity applying improved ABTS radical cation decolourization assay. Free Radical Biology and Medicine 26, 1231-1237.

Rea AI. Schmidt JM. Setzer WN. Sibanda S. Taylor C. Gwebu ET., 2003. Cytotoxic activity of Ozoroa insignis from Zimbabwe *Fitoterapia* 74(7-8), 732-735.

Reid, K. A., Maes, J., Maes, A., van Staden, J., De Kimpe, N., Mulholland, D. A. Verschaeve, L., 2006. Evaluation of the mutagenic and antimutagenic effects of South African plants. Journal of Ethnopharmacology 106, 44–50.

Rekka, E., Kourounakis, P. N., 1991. Effect of hydroxyethyl rutenosides and related compounds on lipid peroxidation and free radical scavenging activity-some structural aspects. Journal of Pharmacy and Pharmacology 43, 486–491.

Reyes, C. P. Nunez, M. J. Jimenez, I. A. Busserolles, J., Alcaraz, M. J., Bazzocchi, I. L., 2006. Activity of lupane triterpenoids from *Maytenus* species as inhibitors of nitric oxide and prostaglandin E2. Bioorganic & Medicinal Chemistry 14, 1573–1579.

Rhee, I. K., Van De Meent, M., Ingkaninan, K., Verpoorte, R., 2001: . A screening for acetylcholinesterase inhibitors from Amaryllidaceae using silica gel thin-layer chromatography in combination with bioactivity staining. Journal of Chromatography A 915, 217–223.

Rietjens, I. M. C. M., Boersma, M. G., Van der Woude, H., Jeurissen, S. M. F., Schutte, M. E., Alink, G. M., 2005. Flavonoids and alkenylbenzenes: mechanisms of mutagenic action and carcinogenic risk. Mutation Research 574, 124–138.

Rijke, E., Out, P., Niessen, W. M. A., Ariese, F., Gooijer C., Brinkman, U. A., 2006. Analytical separation and detection methods for flavonoids. Journal of Chromatography A 1112, 31–63.

Ríos, J. L., 2008. Ganoderma lucidum, unhongo con potenciales propiedades inmunoestimulantes. Revista de Fitoterapia 8, 135–146.

Ríos, J. L., Bas, E., Recio, M. C., 2005. Effects of natural products on contact dermatitis.Current Medicinal Chemistry. Anti-inflammatory and Anti-allergic Agents 4, 65–80.

Rios, J. L., Recio, M. C., 2005. Medicinal plants and antimicrobial activity. Journal of Ethnopharmacology 100, 80-84.

Risa, J., Risa, A., Adersen, A., Gauguin, B., Stafford, G. I., Van Staden, J., Jager, A. K., Screening of plants used in South Africa for epilepsy and convulsions in the $GABA_A$-benzodiazepine receptor assay. Journal of Ethnopharmacology 93(2-3), 177-182.

Robak, J., Duniec, Z., Rzadkowska Bodalska, H., Olechnowicz Stepien, W., Cisowski, W., 1986. The effect of some flavonoids on non-enzymatic lipid oxidation and enzymatic oxidation of arachidonic acid. Pol. ish Journal of. Pharmacognosy and Pharmaceutical 38, 483-491.

Robert, K., Egon, S., Daneila, B., Florian, D., Christoph, W., Gunter, J. K., Emil, C. R., 2001. Role of *Candida* in antibiotic-associated diarrhea. Journal of infectious diseases 184, 1065-1069.

Roberts, M., 1990. Indigenous Healing Herbs. Southern Book Publishers, South Africa, pp. 1–285.

Rocha Martin, L. R., Brenzan, M. A., Nakamura, C. V., Dias Filho, B. P., Nakamura, T. U., Ranei Cortez, L. E., Garcia Cortez, D. A., 2011. In vitro antiviral activity from *acanthaspermum australei on herpesvirus and poliovirus.* Pharmaceutical Biology 49 (1), 26-31.

Rocha-Martins, L. R. R., Benzan, M. A., Nakamura, C. V., Filho, B. P. D., Nakamura, T. U., Cortez, E. R., Corteez, D. A. G., 2010. In vitro antiviral activity of *Acanthospermum australe* on herpevirus and poliovirus. Pharmaceutical biology 49(1), 26-31.

Rosa, A., Pollastro, F., Afzeri, A., Appendino, G., Melis, M. P., Dieana, M., Incani, A., Loru, D., Dessi, M. A., 2011. Protective role of arzanol against lipid peroxidation in biological systems. Chemistry and Physics of lipids 164, 24-32.

Rosengren, Å., Fabricius, A., Guss, B., Sylvén S., Lindqvist, R., 2010. Occurrence of foodborne pathogens and characterization of *Staphylococcus aureus* in cheese produced on farm-dairies. International journal of Food microbiology

Russo, A., Cardile, V., Lombardo, L., Vanela, L., Vanela, A., Garbarino, J. A., 2005. Antioxidant activity and antiproliferative action of methanolic extract of *Geum quellyon* sweet roots in human tumor cells lines. Journal of Ethnopharmacology 100, 323-332.

Saini, N. K., Singhal, M., Srivastava, B., Sachdeva, K., Singh, C. C., 2011. Antimicrobial activity of *Tecomaria capensis* leaves extracts. International Journal of Pharmaceutical Sciences Review and Research 7(1), 121-124.

Sairam, K., Hemalatha, S., Kumar, A., Srinivasan, T., Ganesh, J., Shankar, M., Venkataraman, S., 2003. Evaluation of anti-diarrhoeal activity in seed extracts of *Magnifera indica*. J. Ethnopharmacol. 84: 11-15.

Salvemini, D., Masferrer, J. L., 1996. Interactions of nitric oxide with cyclooxygenase in vitro, ex vivo and in vivo studies. Methods of Enzymology 269:12-25.

Samie, A., Obi, C. L., Bessong, P. O., Namrita, L., 2005. Activity profiles of fourteen selected medicinal plants from rural Venda communities in South Africa against fifteen clinical bacterial species. African Journal of Biotechnology, 4, 1443–1451.

Samie, A., Obi, C. L., Lall, N., Meyer, J. J. M., 2009. In-vitro cytotoxicity and antimicrobial activities, against clinical isolates of *Campylobacter* species and *Entamoeba histolytica*, of local medicinal plants from the Venda region, in South Africa. Annals of Tropical Medicine & Parasitology 103 (2), 159–170.

Samie, A., Tambani, J., Harshfield, E., Green, E., Ramalivhana, J. N., Bessong, P. O., 2010. Antifugal activities of selected Venda medicinal plants against *Candida albicans, Candida krussei and Cryptococcus neoformans* isolated from South African AIDS patients. African Journal of Biotechnology 9(20), 2965-2976.

Samy, R. P., Gopalakrishnakone, P., 2008. Therapeutic Potential of Plants as Anti-microbials for Drug Discovery: Review eCAM 1-12.

Sanders, K. M., 2001. Invited review: mechanisms of calcium handling in smooth muscles. Journal of Applied Physiology 91, 1438–1449.

Saunders, D. R., Wiggins, H. S., 1981. Conservation of mannitol, lactulose, and raffinose by the human colon. American Journal of Physiology 1241, G397–E402.

Savi, L. A., Caon, T., de Oliveira, A. P., Sobottka, A. M., Werner, W., Reginatto, F. H., Schenkel, E. P., Barardi, C. R. M., Simões, C. M. O., 2010. Evaluation of antirotavirus activity of flavonoids. Fitoterapia xxx, xxx–xxx.

Saxena, G., Towers, G. H. N., Farmer, S., Hancock, R. E. W., 1995. Use of specific dyes in the detection of antimicrobial compounds from crude plant extracts using thin layer chromatography agar overlay technique. Phytochemical Analysis 6: 125-129.

Schenk, M., Mueller, C., 2008. The mucosal immune system at the gastrointestinal barrier. Best Practice & Research Clinical Gastroenterology 22, 391–409.

Schiller, L. R., 1999. Secretory diarrhea. Current Gastroenterology Reports 1, 389-397.

Schmitz, H., Rokos, K., Florian, P., Gitter, A. H., Fromm, M., Scholz, P., *et al*., 2002. Supernatants of HIV-infected immune cells affect the barrier function of human HT-29/B6 intestinal epithelial cells. AIDS 16(7), 983–991.

Schuier, M., Sies, H., Illek, B., Fischer, H., 2005. Cocoa-Related Flavonoids Inhibit CFTR-Mediated Chloride Transport across T84 Human Colon Epithelia. Journal of Nutrition, 2320-2325.

Schulzke, J. D., Troger, H., Amasheh, M., 2009. Disorders of intestinal secretion and absorption. Best Practice & Research Clinical Gastroenterology 23, 395–406.

Schwikkard, S., Zhou, B.-N., Glass, T. E., Sharp, J. L., Mattern, M. R., Johnson, R. K., Kingston, D. G. I., 2000. Bioactive compounds from *Combretum erythrophyllum*. Journal of Natural Products 63, 457–460.

Sebothoma, C., 2010. Isolation and characterization of antibacterial compounds from *Searsia* (*Rhus*) *leptodictya* Diels (Anacardiaceae). M. Sc. Thesis submitted to University of Limpopo

Selvarani, V., Hudson, J. B., 2009. Multiple inflammatory and antiviral activities in *Adansonia digitata* (Baobab) leaves, fruit, and seeds. Journal of Medicinal plant Research 3(8), 576-582.

Shai, L. J., McGaw, L. J., Aderogba, L. J., Mdee, L. K., Eloff, J. N., 2008b. Four pentacyclic triterpenoids with antifungal and antibacterial activity from *Curtisia dentata* (Burm.f) C.A. Sm. Leaves. Journal of Ethnopharmacology 118, 238–244.

Shai, L. J., McGaw, L. J., Eloff, J. N., 2009. Extracts of the leaves and twigs of the threatened tree Curtisia dentata (Cornaceae) are more active against Candida albicans and other microorganisms than the stem bark extract. South African Journal of Botany 75, 363–366.

Shai, L. J., McGaw, L. J., Masoko, P., Eloff J. N., 2008a. Antifungal and antibacterial activity of seven traditionally used South African plant species against *C.albicans.* South African Journal of Botany 74, 677-684.

Shale, T. L., Stirk, W. A., van Staden, J., 2005. Variation in antibacterial and anti-inflammatory activity of different growth forms of *Malva parviflora* and evidence for synergism of the anti-inflammatory compounds. Journal of Ethnopharmacology 96, 325-330.

Sharkey, K. A., Mawe, G. M., 2002. Neuroimmune and epithelial interactions in intestinal inflammation. Current Opinion in Pharmacology 2, 669-677.

Sibandze, G. F., Van Zyl, R. L., Van Vuuren, S. F., 2010. The anti-diarrhoeal properties of *Breonadia salicina, Syzygium cordatum* and *Ozoroa sphaerocarpa* when used in combination in Swazi traditional medicine. Journal of Ethnopharmacology 132(2), 506-511.

Sikander, A., Rana, S. V., Prasad, K. K., 2009. Role of serotonin in gastrointestinal motility and irritable bowel syndrome. Clinica Chimica Acta 403, 47–55.

Simmons, D. L., Botting, R. M., Hla, T., 2004. Cyclooxygenase isozymes: the biology of prostaglandin synthesis and inhibition. Pharmacological Review 56, 387-437.

Simpson, A. J., McNally, D. J., Simpson, M. J., 2011. NMR spectroscopy in environmental research: From molecular interactions to global processes. Progress in Nuclear Magnetic Resonance Spectroscopy 58, 97–175.

Slater, T. F., Cheeseman, K. H., Davies, M. J., Proudfoot, K., Xin, W., 1987. Free radical mechanisms in relation to tissue injury. Proceedings of the Nutrition Society 46, 1-12.

Smid, S. D., Svensson, K. M., 2009. Inhibition of cyclooxygenase-2 and EP1 receptor antagonism reduces human colonic longitudinal muscle contractility *in vitro*. Prostaglandins and other lipid mediators 88, 117-121.

Smirnoff, N., Cumbes, O. J., 1996. Hydroxyl radical scavenging activity of compatible solutes. Phytochemistry 28, 1057–1060.

Soderholm, J. D., Perdue M. H., 2006. Effect of stress on intestinal mucosal function. Physiology of the gastrointestinal tract, Fourth Edition, edited by Leonard R. Johnson. Academic Press.

Sousa, A., Ferreira, I. C. F. R., Calhelha R., 2006. Phenolic and antimicrobial activity of traditional stoned table olives “alcaparra”. Bioorganic and Medicinal Chemistry 14, 8533-8538.

Spickett, A. M. Van Der Merwe, D., Matthe, O., 2007. The effect of orally administered *Aloe marlothii* leaveson Boophilus decoloratus tick burdens on cattle. Experimental and Applied Acarol 41, 139–146.

Spiller, R. C., 2004. Inflammation as a basis for functional GI disorder. Best Practice and Research Clinical Gastroenterology 18, 641–661.

Spiller, R., Garsed, K., 2009. Infection, inflammation and irritable bowel syndrome. Digestive and Liver disease, 41, 844-849.

Sprague, A. H., Khalil, R. A., 2009. Inflammatory cytokines in vascular dysfunction and vascular disease. Biochemical Pharmacology 78, 539–552.

Springfield, E. P., Amabeoku, G., Weitz, F., Mabusela, W., Johnson, Q., 2003. An assessment of two *Carpobrotus* species extracts as potential antimicrobial agents. Phytomedicine 10, 434–439.

Stables, M. J., Gilroy, D. W., 2010. Old and new generation lipid mediators in acute inflammation and resolution. Progress in Lipid Research, doi:10.1016/j.plipres.2010.07.005.

Stanzel, R. D. P., Lourenssen, S., Blennerhassett, M. G., 2008. Inflammation causes expression of NGF in epithelial cells of the rat colon. Experimental Neurology 211, 203–213.

Steenkamp, V., Gouws, M. C., 2006. Cytotoxicity of Six South African medicinal plant extracts used in the traditional of Cancer. South African Journal of Botany 72(4), 630-633.

Steenkamp, V., Gouws, M. C., Gulumian, M., Elgorashi, E. E., Van Staden, J., 2006. Studies on antibacterial, antinflammatory and antioxidant activity of herbal remedies used in the treatment of benign prostatic and prostatitis. Journal of Ethnopharmacology 103(1), 71-75.

Steenkamp, V., Mathivha, E., Gouws, M. C., Van Rensburg, C. E. J., 2004. Studies on antibacterial, antioxidant and fibroblast growth stimulation of wound healing remedies from South Africa. Journal of Ethnopharmacology 95(2-3), 353-357.

Stehbens, W. E., 2004. Oxidative stress in viral hepatitis and AIDS. Experimental and Molecular Pathology 121-132.

Sticher, O., 2008: Natural product isolation. Natural product report 25, 517-554.

Stoddart, B., Wilcox, M. H., 2002. Clostridium difficile. Current Opinion in Infectious. Diseases 15, 513–518.

Stojiljkovic, V., Todorovic, A., Pejic, S., Kasapovic, J., Saicic, Z. S., Radlovic, N., Pajovic, S., 2009. Antioxidant status and lipid peroxidation in small intestinal mucosa of children with celiac disease. Clinical Biochemistry 42, 1431–1437

Suleiman, M. M., McGaw, L. J., Naidoo, V., Eloff, J. N., 2010. Evaluation of several tree species for activity against the animal fungal pathogen *Aspergillus fumigatus*. South African Journal of Botany 76, 64-71.

Sun, J., Hu, X.-L., Le, G.-W., Shi, Y.-L., 2010. Lactobacilli prevent hydroxy radical production and inhibit *Escherichia coli* and *Enterococcus* growth in system mimicking colon fermentation. Letters of Applied Microbiology 50, 264-269.

Suzuki, T., Hara, H., 2011. Role of flavonoids in intestinal tight junction regulation. Journal of Nutritional Biochemistry 22, 401–408.

Svenningsen, A. B., Madsen, K. D., Liljefors, T., Stafford, G. I., Staden, J., Jäger, A. K., 2006. Biflavones from *Rhus* species with affinity for the GABA(A)/benzodiazepine receptor. Journal of Ethnopharmacology 103, 276–280.

Taganna, J. C., Quanico, J. P., Perono, R. M. G., Amor, E. C., Rivera, W. L., 2011. Tannin-rich fraction from *Terminalia catappa* inhibits quorum sensing (QS) in *Chromobacterium violaceum* and the QS-controlled biofilm maturation and LasA staphylolytic activity in *Pseudomonas aeruginosa*. Journal of Ethnopharmacology 134, 865–871

Taguri, T., Tanaka, T., Kouno, I., 2004. Antimicrobial activity of 10 different plant polyphenols against bacteria causing food-borne disease. Biol. Pharm. Bull. 27(12) 1965-1969.

Taiwo, O. B., Olajide, O. A., Soyannwo, O. O., Makinde, J. M., 2000. Antiinflammatory, antipyretic and antispasmodic properties of *Chromomaela odorata*. Pharmaceutical Biology 38(5), 367-370.

Takeuchi K, Miyazawa T, Tanaka A, Kato S, Kunikata T., 2002. Pathogenic importance of intestinal hypermotility in NSAID-induced small intestinal damage in rats. Digestion 66, 30–41.

Takeuchi, K., Tanaka, A., Kato, S., Amagase, K., Satoh, H., 2010. Roles of COX inhibition in pathogenesis of NSAID-induced small intestinal damage. Clinica Chimica Acta 411, 459–466.

Takeuchi, T., Fujinami, K., Goto, H., Fujita, A., Taketo, M.M., Manabe, T., Matsui, M., Hata, F., 2005. Roles of M2 and M4 muscarinic receptors in regulating acetylcholine release from myenteric neurons of mouse ileum. Journal of Neurophysiology 93, 2841–2848.

Taraporewala, I. B., Kauffman, J. M., 1990. Synthesis and structure-activity relation-ship of anti-inflammatory 9,10-dihydro 9-oxo-2-acridine alkanoic acids and 4-(2-carboxyphenyl) aminobenzenealkanoic acids. Journal of Pharmacology Science 79, 173–178.

Taylor, J. L. S., van Staden, J., 2001. COX-1 inhibitory activity in extracts from *Eucomis* L'Herit. species. Journal of Ethnopharmacology 75, 257–265.

Teke, G. N., Kuiate, J. R., Ngouateu, O. B., Gatsing, D., 2007. Antidiarrhoeal and antimicrobial activities of *Emilia coccinea* (Sims) G. Don extracts. Journal of Ethnopharmacology 112, 278-283.

Thamburan, S., Klaasen, J., Mabusela, W. T., Cannon, J. F., Folk, W., Johnson, Q., 2006. *Tulbaghia alliacea* Phytotherapy: A Potential Anti-infective Remedy for Candidiasis. Phytotherapy Research 20, 844–850

Thapar, N., Sanderson, I. R., 2004. Diarrhoea in children: an interface between developing and developed countries. The Lancet 363, 641–53.

Thiagarajah, J. R., Verkman, A. S., 2005. New drug targets for cholera therapy. TRENDS in Pharmacological Sciences 26(4), 172-174.

Thring, T. S. A., Springfield, E. P., Weitz, F. M., 2007. Antimicrobial activities of four plant species from the Southern Overberg region of South Africa. African Journal of Biotechnology 6(15), 1779-1784.

Thring, T. S. A., Weitz, F. M., 2006. Medicinal plant use in the Bredasdorp/Elim region of the Southern Overberg in the Western Cape Province of South Africa. Journal of Ethnopharmacology 103, 261–275.

Tobin, G., Giglio, D., Lundgren, O., 2009. Muscarinic receptor subtypes in the alimentary tract. J. ournal of Physiol. ogy and Pharmacol. ogy 60 (1), 3–21.

Todd, E. C. D., Notermans, S., 2011. Surveillance of listeriosis and its causative pathogen, *Listeria monocytogenes*. Food Control 22, 1484-1490.

Tona, L., Cimanga, R. K., Mesia, K., Musuamba, C.T., De Bruyne, T., Apers, S., Hernans, N., Van Miert, S., Pieters, L., Totte, J., Vlietinck, A.J., 2000. Antiamoebic and spasmolytic activities of extracts from some antidiarrhoeal traditional preparations used in Kinshasa, Congo. Phytomedicine 2000 7(1), 31-8.

Tona, L., Kambu, K., Mesia, K., Cimanga, K., De Bruyne, T., Pieters, L., Totté, J., Vlietinck, A.J., 1999. Biological screening of traditional preparations from some medicinal plants used as antidiarrhoeal in Kinshasa, Congo. Phytomedicine 6, 59–66.

Tona, L., Kambu, K., Ngimbi, N., Cimanga, R. K., Vlietinck, A. J., 1998. Antiameobic and phytochemical screening of some Congolese medicinal plants. Journal of Ethnopharmacology 61(1), 57-65.

Troeger, H., Epple, H. J., Schneider, T., Wahnschaffe, U., Ullrich, R., Burchard, G. D., *et al*., 2007. Effect of chronic *Giardia lamblia* infection on epithelial transport and barrier function in human duodenum. Gut 56(3), 328-335.

Troeger, H., Loddenkemper, C., Schneider, T., Schreier, E., Epple, H. J., Zeitz, M., et al., 2009. Structural and functional changes of the duodenum in human norovirus infection. Gut 58, 1070-1077.

Tshibangu, J. N., Wright, A. D., Konig, G. M., 2003. HPLC isolation of the anti-plasmodially active bisbenzylisoquinone alkaloids present in roots of *Cissampelos mucronata*. Phytochemical Analysis 14(1),13-22.

Tshikalange, T. E., Hussein, A. A., 2010. Cytotoxicity activity of compounds from *Elaeodendron transvaalense* ethanol extract. Journal of Medicinal Plant Research 4(16), 1695-1697.

Tshikalange, T. E., Meyer, J. J. M., Hussein, A. A., 2005. Antimicrobial activity, toxicity and the isolation of a bioactive compound from plants used to treat sexually transmitted diseases. Journal of Ethnopharmacology 96(3):), 515-519.

Turel, I., Ozbek, H., Erten, R., Oner, A. C., Cengiz, N., Yilmaz, O., 2009. Hepatoprotective and anti-inflammatory activities of *Plantago major* L. Indian Journal of Pharmacology 41(3), 120-124.

Uchida, K., 1999. Current status of acrolein as a lipid peroxidation product. Trends Cardiovascular Medicine 9, 109–113.

UNAIDS, 2006. Report on the Global AIDS Epidemic, May 2006.

Unno, T., Matsuyama, H., Sakamoto, T., Uchiyama, M., Izumi, Y., Okamoto, H., Yamada, M., Wess, J., Komori, S., 2005. M2 and M3 muscarinic receptor-mediated contractions in longitudinal smooth muscle of the ileum studied with receptor knockout mice. British Journal of Pharmacology 146, 98–108.

Valeur, J., Lappalainen J., Rita, H., Lin, A. H., Kovanen, P. T., Berstad, A., Eklund, K., Vaali K., 2009. Food allergy alters jejuna circular muscle contractility and induces local inflammatory cytokines expression in a mouse model. BMC gastroenterology 9:33.

Valko, M., Leibfritz, D., Moncol, J., Cronin, M. T. D., Mazur, M., Telser, J., 2007. Free radical and antioxidants in normal physiological functions and human diseases. The International Journal of Biochemistry and Cell Biology 39, 44-84.

Valko, M., Morris, H., & Cronin, M. T. D., (2005). Metals, toxicity and oxidative stress. Current MedicinalChemistry 12, 1161–1208.

Van Damme, I. Habib, I., De Zutter, L., 2010. "*Yersinia enterocolitica* in slaughter pig tonsils: enumeration and detection by enrichment versus direct plating culture," Food Microbiology, 27(1), 158–161.

Van der Merwe, D., Swan, G. E., Botha, C. J., 2001. Use of ethnoveterinary medicinal plants in cattle by Setswana-speaking people in the Madikwe area of the North West Province of South Africa. Journal of the South African Veterinary Association 72, 189-196.

Van der Watt, E., Pretorious, J. C., 2001. Purification and identification of active antibacterial components in *Carpobrotus edulis*. L. Journal of Ethnopharmacology 76, 87-91.

Van Dyk, S., Griffitto, S., Van Zyl, R. L., Malan, S. F., 2009. The importance of including toxicity assays when screening plant extracts for antimalarial activity. African Journal of Biotechnology 8(20), 5595-5601.

Van Wyk, B., Van Wyk, P., 1997. Field Guide to Trees of Southern Africa. Struik Publishers (A Division of New Holland Publishing, South Africa), Cape Town, South Africa, p. 496.

Van Wyk, B., Wink, M., 2004. Health disorders and Medicinal plants. In: Medicinal plants of the world. Published by Briza Publications CK90/11690/23, P O Box 56569, Arcadia 0007, Pretoria, South Africa Pp 351-370.

Van Wyk, B.-E., 2008a. A review of Khoi-San and Cape Dutch medical ethnobotany. Journal of Ethnopharmacology 119, 331–341.

Van Wyk, B.-E., 2008b. A broad review of commercially important Southern African medicinal plants. Journal of Ethnopharmacology 119, 342–355.

Van Wyk, B.-E., de Wet, H., Van Heerden, F. R., 2008. An ethnobotanical survey of medicinal plants in the Southeastern Karoo, South Africa. South African Journal of Botany 74, 696–704.

Van Wyk, B.-E., Gericke, N., 2000. People's Plants: A Guide to Useful Plants of Southern Africa. Briza Publications, Pretoria, ISBN: 978 1 875093 19 9

Velazquez, C., Calzada, F., Esquivel, B., Barbosa, E., Calzada, S., 2009. Antisecretory activity from the flower of *Chiranthodendron pentadactylon* and its flavonoids in intestinal fluid accumulation induced by *Vibrio cholerae* toxin in rats. Journal of Ethnopharmacology, 126, 455-458.

Velázquez, C., Calzada, F., Torres, J., González, F., Ceballos, G., 2006. Antisecretory activity of plants used to treat gastrointestinal disorders in Mexico. Journal of Ethnopharmacology 103, 66–70.

Venter, F., Venter, J.-A., 2002. Making the Most of Indigenous Trees, rev. edition. Briza Publications, Pretoria, South Africa, p. 28

Vermerris, W., and Nicholson, R., 2006. Phenolic Compounds Biochemistry, Publisher Springer, New York. Pp 151-196.

Verschaeve, L., Van Staden, J. 2008. Mutagenic and antimutagenic properties of extracts from African South traditional medicinal plants. Journal of Ethnopharmacology 119(3), 575-587.

Vital, P. G., Rivera, W. L., 2009. Antimicrobial activity and cytotoxicity of *Chromolaena odorata* (L. F.) King and *Uncaria perrottetii* (A. Rich) Merr. Extracts. Journal of Medicinal plant Research 3(7), 511-518.

Vitali, F., Fonte, G., Saija, A., Tita, B., 2006. Inhibition of intestinal motility and secretion by extracts of *Epilobium* spp. in mice. Journal of Ethnopharmacology 107, 342-348.

Viviers, P., Kolodziej, H., Young, D., Ferreira, D., Roux, D., 1983. Journal of Chemical Society, Perkin Trans 1, 2555.

Voirin, B.; Jay, M.; Hauteville, M., 1975. Isoetine, nouvelle flavone isolee de *Isoetes delilei* et de *Isoetes durieui*. Phytochemistry 14, 257-259.

Von Koenen, E., 2001. Medicinal Poisonous and Edible Plants in Namibia. Klaus Hess Publishers, Windhoek and Göttingen, ISBN: Namibia 99916-747-4-8; Germany 3-9804518-7-9.

Voravuthikunchai, S. P., and Limsuwan, S., 2006. Medicinal plant Extracts as anti-*Escherichia coli* 0157:H7 agent and their effects on Bacterial Cell aggregation. Journal of Food Protection 69(10), 2336-2341.

Vundac, V. B., Brantner, A. H., Plazibat, M., 2007. Content of Polyphenolic constituent and antioxidant activity of some stachys taxa. Food Chemistry 104, 1277-1281.

Wafo, P., Kamdeen, R. S. T., Ali, Z., Anjuin, S., Begum, A., Oluyemisi, O. O., Khan, S. N., Ngadjui, B. T., Etoa, X. F., Choudhany, M. I., Kaurene-typye diterpenoids from *Chromolaena odorata*, their X-ray diffraction studies and potent α-glycosidase inhibition of 16-kauren-19-oic acid.

Wang, G. J., Chen, Y. M., Wang, T. M., Lee, C. K., Chen, K. J., Lee, T. H., 2008. Flavonoids with iNOS inhibitory activity from *Pogonatherum crinitum*. Journal of Ethnopharmacology 118, 71–78.

Wang, M., Takeda, K., Shiraishi, Y., Okamoto, M., Dakhama, A., Joetham, A., Gelfrand, E. W., 2010. Peanut-induced intestinal allergy is mediated through a mast cell–IgE–Fc□RI–IL-13 pathway. Journal of Allergy and Clinical Immunology 126(2), 301-316.

Wanjala, C.C.W., Juma, B.F., Bojase, G., Gashe, B.A., Majinda, R.R.T., 2002. Erythrinaline alkaloids and antimicrobial flavonoids from *Erythrina latissima*. Planta Medica 68, 640–642

Watt, J. M., Breyer-Brandwijk, M. G., 1962. The Medicinal and Poisonous Plants of Southern and Eastern Africa, second edition, Livingstone, London.

Watt, J. M., Breyer-Brandwijk, M. G., 1996. The Medicinal and Poisonous Plants of Southern and Eastern Africa, 2nd ed. E. & S. Livingstone Ltd., London.

Weigenand, O., Hussein, A. A., Lall, N., Meyer, J. J. M., 2004. Antibacterial activities of Naphthoquinones and Triterpenoids from *Euclea natalensis.* Journal of Natural Product 67, 1936-1938.

Wernes, S. W., and Lucchesi, R., 1990. Free radicals and ischemic tissue injury. Trends in Pharmacological Sciences 11, 161-166.

Wettasinghe, M., Shahidi, F., Amarowicz, R., Abou-Zaid, M. M., 2001. Phenolic acids in defatted seeds of borage (*Borago officinalis* L.). Food Chemistry 75, 49-56.

Wistrom, S. R., Norrby, E. B., Myhre, E. B., *et al*., 2001. Frequency of antibiotic-associated diarrhoea in 2462 antibiotic treated hospitalized patients: a prospective study. Journal of Antimicrobial Chemotherapy 47, 43–50.

Wood, J. D., 2004. Enteric Neuroimmunophysiology and pathophysiology. Gastroenterology 127, 635-657.

World Health Organization (WHO) and United Nation Children Fund (UNICEF), 2004. Clinical World Health Organization (WHO) and United Nation Children Fund (UNICEF), 2004: Clinical Management of Acute Diarrhea. WHO/FCH/CAH/04.7 World Health Organization, Geneva.Management of Acute Diarrhea. WHO/FCH/CAH/04.7 World Health Organization, Geneva.

Wouters, M. M., Farrugia, G., Schemann, M., 2007. 5-HT receptors on interstitial cells of Cajal, smooth muscle and enteric nerves. Neurogastroenterology Motility 19 (Suppl 2), 5–12.

Wu, S. W., Dornbusch, K., Kronval, G., 1999. Genetic characterization of resistance to extended-spectrum betalactams in *Klebsiella oxytoca* isolates recovered from patients with septicemia at hospitals in the Stockholm area. Antimicrobial Agents and Chemotherapy 43, 1294–1297.

Wynn, S. G., Fougere, B. J., 2007. A systems-based approach: Diarrhea-Therapeutic rationale. In: Veterinary Herbal medicine. (Edited by Wynn GS and Fougere BJ) Mosby Elsevier 11830 Westline Industrial Drive, St Louis, Mussolini 63146: 33336-337.

Xu, Y., Oliverson, B. G., Simmons, D. L., 2007. Trifunctional inhibition of COX-2 by extracts of *Lonicera japonica*: Direct inhibition, transcriptional and post-transcriptional down regulation. Journal of Ethnopharmacology 111:667-670.

Xue, C., Tada, Y., Dong, X., Heitman, J., 2007. The human fungal pathogen *Cryptococcus* can complete its sexual cycle during a pathogenic association with plants. Cell Host and Microbes 1, 2633-273.

Yadav, A. K., Tangpu, V., 2009. Therapeutic efficacy of *Biden pilosa* L. Var. radiata and *Galinsoga parviflora* Cav. in experimentally induced diarrhoea in mice. Phytopharmacology and Therapeutic values V, 35-45.

Yakubu, M.T., Afolayan, A.J., 2009. Reproductive toxicologic evaluations of Bulbine natalensis baker stem extract in albino rats. Theriogenology 72, 322–332.

Yamagiwa, Y., Ohashi, K., Sakamota, Y., Hirakawa, S., Kamikawa, T., 1987. Syntheses of anacardic acids and ginkgoic acid. Tetrahedron 43(15), 3387.

Yarnell, E., 2007. Plant chemistry in Veterinary medicine: Medicinal constituents and their mechanism of action. In: Veterinary Herbal medicine. (Edited by Wynn GS and Fougere BJ) Mosby Elsevier 11830 Westline Industrial Drive, St Louis, Mussolini 63146: 167-168.

Yff, B. T. S., Lindsey, K. L., Taylor, M. B., Erasmus, D. G., Jager, A. K., 2002. The pharmacological screening of *Pentanisia pruelloides* and the isolation of the antibacterial acompound palmitic acid. Journal of Ethnopharmacology 79(1), 101-107.

Yokozawa, T., Dong, E., Chung, H. Y., Oura, H., Nakagawa, H., 1997. Inhibitory effect of green tea on injury to a cultured renal epithelial cell line, LLC-PK$_1$. Bioscience Biotechnology and Biochemistry 61, 204-206.

Zschocke, S., Van Staden, J., Paulus, K., Bauer, R., Horn, M. M., Munro, O. Q., Brown, N, J., Drewes, S. E., 2000. Stereostructure and anti-inflammatory activity of three diastereomers of Ocobullenone from *Ocotea bullata*. Phytochemistry 54, 591-595.

Zwenger, S., Basu, C., 2008. Plant terpenoids: applications and future potentials. Biotechnology and Molecular Biology Reviews 3, 001-007.

Appendix 2.1: ETHNOBOTANICAL AND LITERATURE INFORMATION OF MEDICINAL PLANT SPECIES USED TRADITIONALLY FOR TREATING DIARRHOEA IN SOUTH AFRICA

Family/Plant species	Local names	Part used	Ethnopharmacological information	Biological activities investigated	Bioactive compound(s) isolated
Aizoaceae					
Carpobrotus acinaciformis (L.) L. Bolus	perdevy	Leaf juice	Sore throat, dysentery, mouth infection (van Wyk, 2008)	Antibactertial (Oskay *et al*., 2009)	2-descarboxy-betanidin (Dembitsky, 2005)
Carpobrotus edulis (L.) L. Bolus	Ikhambi-lamabulawo. Umgongozi	leaves	Diarrhoea, digestive problems, allergy(Thring and Weitz, 2006); dysentery (van Wyk, 2008)	Antibacterial (Van der Watt *et al*., 2001)	Rutin, hyperoside, neohesperidin, catechin, ferulic acid (van der Watt *et al*., 2001)
Carpobrotus muirii (L.) L. Bolus		Leaves	Dysentery, digestive problem, mouth ulcers, thrush (Thring and Weitz, 2006)	Antimicrobial (Springfield *et al*, 2003)	-
Alliaceae					
Agapanthus praecox Willd.	uMkhondo (X)	Roots	Diarrhoea in sheep and goat (Dold and Cocks, 2001, McGaw and Eloff., 2008)	-	-
Tulbaghia alliacea L.f.	Umwelela X, ivimba-mpunzi X, Sikwa Z	bulb	Stomach ache, fever, tuberculosis, influenza (Bisi-Johnson *et al*., 2010)	Antimycobacterial (Bamuamba *et al*., 2008), Mutagenicty and antimutagenicity (Reid *et al*., 2006), anticandidiasis (Thamburan *et al*., 2006)	-
Amaranthaceae					
Guilleminea densa Moq	Sephatho (S)	Root	Decoction for diarrhoea (Mathabe *et al*., 2006)	-	-
Hermbstaedtia odorata Wild	Ubuphuphu (X, Z)	leaves	Food and infusion for diarrhoea (Bisi-Johnson *et al*., 2010); Root cleansing stomach wash alone or with *Acaccia xanthophloea* and (Hutchings *et al*., 1996).	-	-
Amaryllidacceae					
Scadoxus puniceus (L.) Friis and Nordal	Umphompho-wezinja, Isiphompho umgola Z	Bulb and root	Stomach ache, diarrhoea, nausea (Bisi-Johnson *et al*., 2010)	Antimicrobial, anti-inflammatory, acetylcholinesterase inhibition and mutagenic activities (Ndhlala *et al*., 2010)	-
Anacardiaceae					
Mangifera indica L.	Umango	Leaves, bark	Diarrhoea (de Wet *et al*., 2010)	Antidiarrhoeal (Sairam *et al*., 2003), antidiabetic (Aderibigbe *et al*., 2001	Gallotannins (Engels *et al*., 2010), mangiferrin (Singh *et al*., 2009).
Ozoroa insignis Delile	Monoko	Stem bark	Decoction for diarrhoea (Mathabe *et al*., 2006), vinearal diseases, parasites, kidney trouble (Liu and Abreu, 2006)	Antibacterial (Mathabe *et al*., 2006); antigardial (Johns *et al*., 1995), antimalarial (Asase *et al*., 2005), Cytotoxicity (Rea *et al*., 2003), antischistosomiasis (Molgaard *et al*., 2001; Ndamba *et al*., 1994).	6-pentadecylsalicylic acid (antifouling), tirucallane triterpenes (Liu and Abreu, 2006)

Ozoroa mucronata (Bernh.ex C.Krauss) R.fern & A. Fern		root	Diarrhoea, intestinal parasites and stomach trouble (Yamagiwa *et al*., 1987)	LOX inhibition, PG synthase inhibition (Kubo *et al*, 1987)	Anarcardic acid (LOX inhibition) (Ha and Kubo, 2005), Moronic acid (Hotesttmann Kaldas and Nakanishi, 1979)
Ozoroa paniculosa (Sond.) R. & A. Fernandes	Mubandulakhali, Mudumbula (V)	Bark, root bark	Abdominal problems in animal (Hutching *et al*., 1996), Diarrhoea, sweating sickness (Van der Merwe *et al*., 2001; McGaw *et al*., 2008)	Antioxidant (Motlhanka, 2008), antimicrobial and antimycobacterial	-
Ozoroa schaerocarpa R. Fern & A. Fern	Mudumbula (V)	Bark	Infusion for diarrhoea (Sibandze *et al*., 2010)	Antiescherichial (Sibandze *et al*., 2010)	-
Protorhus longifolia (Bernh.ex C. Krauss) Engl.	i(u)Zntlwa, ikubalo, umkupati X	Bark	Heartwater and diarrhoea in cows (Dold and Cocks, 2001, McGaw and Eloff, 2008); Heart burn and stomach bleeding (Hutchings *et al*., 1996)	Antimicrobial (Suleiman *et al*., 2010)	-
Sclerocarya birrea (A. Rich.) Hochst. subsp. *caffra* (Sond.)	Mufula (V)	Leaves, bark, roots	Diarrhoea and fractures (Van der Merwe *et al*., 2001; McGaw *et al*., 2008)	Mutagenicity, antimutagenicity (Elgorashi *et al*., 2003), Antibacterial, antihelmintic and cytotoxicity (McGaw *et al*., 2007), antidiarrhoea (Galvez *et al*., 1991), antibacterial (Eloff, 2001), anti-inflammation (Ojewole, 2010), antioxidant (Braca *et al*., 2003), anti-diabetic (Ojewole, 2004)	Gallotannin, tannic, mallic, gallic and citric acid, triterpene, flavonoid, coumarins (Ojewole *et al*., 2010)
Searsia gueinzii Sond (Syn *Rhus gueinii Sond*	Mushakaladza (V)	root	Gastrointestinal infections (Elgorashi *et al*., 2003)	Mutagenicity , antimutagenicity (Elgorashi *et al*., 2003)	-
Searsia incisa L.f.	uNongquthu	Root and bark decoction	Shock and diarrhoea (Dold and Cocks, 2001, McGaw *et al*., 2008)		-
Searsia lancea L.f.	Mushakaladza (V)		Diarrhoea and gallsickness (Van der Merwe *et al*., 2001; McGaw *et al*., 2008)	Antibacterial, antihelminttic and cytotoxicity (McGaw *et al*., 2007)	-
Searsia leptodictya Diels	Mushakaladza (V)	leaves	Browser, gall sickness in cattle, infectious disease, chest and abdominal pain (Sebothoma, 2010)	Antimicrobial (Sebothhoma, 2010)	(-)-leucofisetinidin, (-)-epicatechin and [4,8]-(+)-fisetinidol-(-)-epicatechin (Viviers *et al*., 1983)
Searsia pendulina Jacq.	-	Leaves	Stomach ailment, enema in children (Coates-Palgrave, 2002)	-	-
Searsia pentheri Zahlbr.	Muthasiri (V)	leaves	Epilepsy (Svenningsen *et al*., 2006)	$GABA_A$/benzodiazepine receptor affinity (Svenningsen *et al*., 2006)	Apeginin, agathisflavone (Svenningsen *et al*., 2006)
Searsia rogersii Schonland	Muthasiri (V)	Bark	Pain, watery diarrhoea (Samie *et al*., 2010)	Antifungal (Samie *et al*., 2010), Antimycobacterium (Green *et al*., 2010)	-
Annonaceae					
Annona	Muembe (V)	Bark	Toothache, venereal, diarrhoea (Mabogo,	Antidiarrhoeal (Suleiman *et al*.,	**Annnosenegalina** (cytotoxic and antiparasitic**), Annonacin**

senegalensis Pers.			1990; More *et al*., 2008)	2008), antivenom (Adzu *et al*., 2005), antimalaria (Okokon *et al*., 2006)	(cytotoxic agent, insecticidal, mutagenic activity) immunosuppressant), **senegalene** (cytotoxic agent), **17, 19-kauranediol (*ent*-16β)-form. Dicarboxylic acid, 19-Methyl ester** (toxic to brime shrimp)
Uvaria chamae P. Beauv		Root	Catarrh, dysentery, fever, hematemesis, inflammation, jaundice, wounds, yellow fever (Reid et al., 2006)	Antimalaria (Okokon *et al*., 2006); mutagenic and antimutagenic (Reid *et al*., 2006)	-
Apiaceae					
Alepidia amatymbica Eckl. & Zeyh.	Iqwili, Ikhathazo (Z)	Root	Decoction for diarrhoea (Appidi *et al*., 2008)	Antimicrobial, anti-inflammatory and genotoxicity (Mulaudzi *et al*., 2009)	Rosmarinic acid, Dehydrokaurenoic aicd, Kaurenoic acid, kaurene lactone, acetoxy kaurene lactone (Holzapfel *et al*., 1995)
Centella asiatica (L.) Urb.		Root	Chronic diarrhoea and dysentery; diaphoretic (van Wyk, 2008)	Modulator of nitric oxide production and TNF-α (Nhiem *et al*., 2011), , lipid peroxidation (Kumar and Muller, 1999)	Asiaticoside G, asiaticoside, asiaticoside F, asiatic acid, quadranoside IV, 2a,3b,6b-trihydroxyolean-12-en-28-oic acid 28-O-[α-L-rhamnopyranosyl-(1→4)-β-D-glucopyranosyl-(1→6)-β-D-glucopyranosyl] ester, kaempferol, quercetin, astragalin, and isoquercetin (Nhiem *et al*., 2011)
Centella glabrata L.		Root and stalk	Chronic diarrhoea and dysentery, diaphoretic (van Wyk, 2008b)	-	-
Foeniculum vulgare Mill.		Leaf	Flatulence, cough, diuretic, digestive problem, diarrhoea, stomach ache and cramps (Watt and Breeyer-Brandwijk, 1962; van Wyk, 1997)	Antimicrobial (Bacillus cereus, Clostridium botulinum, Salmonella enteritidis, Staphylococcus aureus, Yersinia enterocolitica) (Ceylan and Fung, 2004)	**Falcarindiol** (antifungal, antibiotic and analgesic, antinociceptive, DNA topoisomerase inhibitor, phytotoxic, allelochemical, antimutagenic and antiproliferative agents), 1-(4-hydroxyphenyl)-1,2-propanediol form, 4' methyl ether (phytotoxin, antiparasitic, nematocidal agent)
Apocynaceae					
Acokanthera oblongifolia (Hochst.) Codd	inHlungunyembe Intlungunyembe (X, Z)	leaves	Severe gastrointestinal irritation (Verschaeve and Van Staden, 2008), Decoction for stomach ache, diarrhoea (Bisi-Johnson *et al*., 2010)	Genotoxicity (Elgorashi *et al*., 2003); Epilepsy and convulsion (Risa *et al*., 2004)	**Acolongifloroside K** and **H (**antineoplastic agent)
Catharanthus roseus (L.) G.Don	Imbali, Ikhwinini, Isishushlungu (Z)	Leaves, stem and root	Diarrhoea (de Wet *et al*., 2010)	Antimicrobial (van Vuuren and Naidoo, 2010)	**Serpentine** (antitumour activity);apparicine (cytotoxin, weak antbacterial, antiviral agent active against Polio virus, analeptic properties); **β-carboline** (induced mutagenicity, antiparasitic, antitrypanosomal agent); **Catharanthamine** (antitumour); **Trichosetin** (antibacteria); **16-Epi-2-isositsirikine** antineoplastic); **Leurosine** (antihyperglycaemic); **Lochnerinine** (antitumour); **Pericyclivine** (weak cytotoxic activity); **15',20'-anhydroviriblastine** (antineoplastic agent); **Vindoline** (antineoplastic); **Vindolinine** (antiglycaemic agent, antifungi); **Vingamine** (cytotoxic); **yohimbine** (selective α_2 – adrenoceptor antagonist, antidepressant, antihypotensive, , antidiuretic activity, aphrodisiac, anxiogenic activity in rodent)
Sarcostemma viminale	Umbelebele, Ingotshwa	Stem	Infusion for diarrhoea (de Wet *et al*., 2010), Increase livestock productivity	Antibacterial, anti-inflammatory and mutagenic effects (Luseba *et al*,	-

(L) R. Br subsp. *viminale*			(Kunene and Fossey, 2006)	2007)	
Aquifoliaceae					
Ilex mitis (L.) Radlk.	Monamane (S), Mutanzwa-khamelo (V)	Root bark	Decoction for diarrhoea (Mathabe *et al.*, 2006)	Antimalaria and cytotoxicity (Rasoanaivo *et al.*, 2004)	-
Araliaceae					
Cussonia arborea Hochst ex A. Rich		Root, leaves	Decoction for diarrhoea (De Villiers *et al.*, 2010)	antimicrobial and antimalarial (De Villiers *et al.*, 2010)	Arboreaside A, Arboreaside B, Arboreaside C, Arboreaside D, Arboreaside E, ciwujianoside C3 and 23-hydroxyursolic acid 28-*O*-α-L-rhamnopyranosyl-(1→4)-*β*-D-glucopyranosyl-(1β6)-*β*-D-glucopyranosyl ester (Kougan *et al.*, 2009)
Asclepiadaceae					
Asclepias fruticosa L.	iGwada (X), Mutshulwa (V), Lebegana (S)	Root, leaves	Diarrhoea and stomach pain in children (Lewu and Afolayan, 2009)	Antimycobacterium (Green *et al.*, 2010), antifungal (Samie *et al.*, 2010), antimicrobial, anti-inflammatory, anticholinesterase and mutagenic activities (Ndhlala *et al.*, 2010)	-
Secamone filiformis (L.f) J. H. Ross	iMbijela	Stem	Diarrhoea in cattle (Dold and Cocks, 2001, McGaw *et al.*, 2008)	Antihelminthic, antibacterial and cytotoxicity (McGaw *et al.*, 2007)	-
Xysmalobium undulatum (L.) W.T. Aiton	Ishongwe (X, Z)	Roots	Diarrhoea , dysentery, stomach cramps, headache, oedema, dysmenorrhoea (Bisi-Johnson *et al.*, 2010)	Antibacterial (Rabe and Van Staden, 1997), PG inhibition (Jager *et al.*, 1996), Serotonin re-uptake modulatory activity (Nielsen *et al.*, 2004), antidepression (Pedersen *et al.*, 2008)	-
Asparagaceae					
Asparagus cooperi Bak.	Lefatshana (S)	Whole plant	Decoction for diarrhoea (Mathabe *et al.*, 2006)	Antibacterial (Mathabe *et al.*, 2006)	-
Asphodelaceae					
Aloe arborescens Miller	Inhlaba, Tshikhopha (V)	leaves	Diarrhoea and sore (Mlambo, 2008)	Anti-inflammatory (Lindsey *et al.*, 2002); immunomodulator, anti-inflammatory (Imanishi, 1993),	Aloctin A (Imanishi, 1993); aloenin, 2'-*O*-*p*-coumaroylaloesin, 2'-*O*-feruloylaloesin, isobarbaloin, and barbaloin (Beppu *et al.*, 2003)
Aloe candelabrum Berger	Ikhalana Inkalane (X) Uphondonde (Z)	leaves	Decoction for diarrhoea (Bisi-Johnson *et al.*, 2010)	-	-
Aloe greatheadii Schonl.	Sekgopha (S)	Leaves	Decoction for diarrhoea (Mathabe *et al.*, 2006)	antioxidant (Botes *et al.*, 2008), antiplasmodial and cytotoxicity (Van Dyk *et al,* 2009)	-
Aloe marlothii Berger	Bindamutsho, Tshikhopha (V)	Leaves	Gallsickness, parasites, diarrhoea, constipation, retain placenta, dystocia maggots (Van der Merwe *et al.*, 2001;	antimalaria (Pillay *et al.*, 2008), antibacterial, antihelminthic, anti-amoebic (McGaw *et al.*, 2000),	-

			McGaw *et al*., 2008)	antitick (Spicket *et al*., 2007)	
Bulbine abyssinica A. Rich	Utswelana Intelezi (X) Ibhucu (Z), Incelwane (X)	Leaves, tubers	Vomiting, diarrhoea, tuberculosis (Bisi-Johnson *et al*., 2010)	Antileukemia, antiplasmodial, cytotoxicity (Bringmann *et al*, 2002)	Chrysophanol, aloe-emodin, knipholone, isoknipholone, Bulbine-knipholone (Bringmann *et al*, 2002)
Bulbine asphodeloides (L.) Willd		tuber and leaves	rashes, sores wounds, dysentery and diarrhoea (Iwalewa *et al*., 2007)	-	-
Bulbine fructescen Wild	Intelezi (X)	leaf, root and rhizome	Diarrhoea, burns, rashes, blisters, insect bites, cracked lips and mouth ulcers (Coopoosamy, 2011)	Antibacterial (Coopoosamy, 2011), antiplasmodial (Mutanyatta *et al,* 2005)	knipholone, 4-O-demethylknipholone-4-β-D-glucopyranoside (Mutanyatta *et al,* 2005)
Bulbine latifolia (L.f) Roem et Schult	Irooiwater	Root	Decoction for diarrhoea (Appidi *et al*., 2008)	Antibacterial (Coopoosamy, 2011)	**Knipholone** (antiplasmodial activity, cytotoxic agent)
Bulbine natalensis (Bak. Cf. roowortel	Ibhucu (Z)	leaves	Decoction for diarrhoea (Mathabe *et al*., 2006); vomiting, diarrhoea, convulsion,venereal diseases, diabetes and rheumatism (Pujol, 1990)	Sexuality behaviour (Yakubu and Afolayan, 2008), Toxicity (Afolayan and Yakubu 2008)	-
Asteraceae					
Acanthospermum glabratum (DC) Wild	Inamathela	Whole plant	Diarrhoea (de Wet *et al*., 2010)	-	-
Acanthospermum australe (Loefl.) O. Kuntze	Umgwaqeni (Z)	Whole plant	Diarrhoea (Mlambo, 2008)	Antiherpesvirus and antipoliovirus (Rocha Martin *et al*., 2010)	Acanthoaustralide, quercitin and chrysosplenol (Rocha Martin *et al*., 2010)
Artemisia absinthium L.		leaves	Diarrhoea (Van Wyk *et al*., 2008)	Antimycobacterium (Gautam *et al*., 2007)	-
Bidens bipinnata L.	Uvelemampo ndweni uvelegoli	leaves	Infusion for diarrhoea (Bisi-Johnson *et al*., 2010), haemorrhage, reduce cancer, flu, cold, fever (Pooley, 1998)	Antidiarrhoea (Atta and Mouneir, 2005)	-
Bidens pilosa L.	iSanama, Mushidzhi (V)	Root or leaves, flowers	Stomach pain (Lewu and Afolayan, 2009); diarrhoea, inflammation, female infertility, excessive menstruation (Dold and Cocks, 2000)	Antidiarrhoeal (Yadav and Tangpu, 2009), amoebicidal (Moundipa *et al*., 2005), immunomodulator (Chang *et al*., 2007, Chiang *et al*., 2007)	Centaurein, centaureidin, cytopiloyne (Chang *et al*., 2007, Chiang *et al*., 2007)
Brachylaena ilicifolia (Lam.) Phill. & Schweick	uMgqh	Leaves	Diarrhoea in lambs (Dold and Cocks, 2001; McGaw *et al*., 2008)	-	-
Brachylaena transvaalensis E. Philips and Schweick	Iphahlalehlathi	Leaves and bark	Diarrhoea (de Wet *et al*., 2010)	--	-
Callilepis laureola Hutch	Impila (Z)	Roots	Diarrhoea (Mlambo, 2008)	-	-
Chromolaena	Usandanezwe (Z)	Leaves	Diarrhoea (Mlambo, 2008)	Anti-inflammatory, antipyretic	15-angeloyloxy-16,17-epoxy-19-kauronic acid, 16-kauren-19-

odorata L.				antispasmodic (Taiwo *et al*., 2000), antidiabetic (Wafo *et al*.,2011), antimicrobial and cytotoxicity (Vital and Rivera, 2009)	oic acid, 6'-hydroxy-2',3',4,4'-tetramethoxychalcone, isosakuranetin, acacetin, and kaempferide (Wafo *et al*. 2011)
Conyza scabrida DC.		Herb	Cold, influenza, inflammation, diarrhoea, fever, diabetes, stomach affliction (Thring *et al*., 2007)	Antimicrobial (Thring *et al*., 2007)	-
Dicoma anomala Sond.	Umuna (Z), Inyongana (X)	Roots	Decoction for diarrhoea, stomach cramp and skin lesion (Shale *et al*., 1999)	Antibacterial, antioxidant, fibroblast growth stimulant (Steenkamp *et al*., 2004)	-
Dicoma capensis Less.		Herb	Bitter tonic and diuretic; kidney; bladder; back pain; nausea; influenza; colds; cancer; diarrhoea (van Wyk, 2008)	Cytotoxicity (Steenkamp and Gouws, 2006)	-
Helichrysum adenocarpum DC		Root decoction	Diarrhoea and vomiting in children (Lourens *et al*., 2008)		-
Helichrysum calophyllum Klatt		Root	Hyperfunction of lower gastrointestinal tract (Lourens *et al*., 2008)	-	-
Helichrysum ecklonis Sond		Root decoction	Diarrhoea in children (Lourens *et al*., 2008)	-	-
Helichrysum odoratissimum (L.)	Imphepho (Z)	Whole plant	Diarrhoea (Mlambo, 2008)	Antimicrobial (Puyvelde *et al*., 1989)	3,5-dihydroxy-6,7,8-trimethoxyflavone and 3-0-methylquercetin, helichrysetin (Puyvelde *et al*., 1989)
Pentzia incana (Thunb.) Kuntze			Diarrhoea (Van Wyk *et al*., 2008)	-	-
Schkuhria pinnata (Lam.) Thell.	Unsakansaka (Z)	Aerial parts	Pneumonia, diarrhoea, eye infections, heartwater (Van der Merwe *et al*., 2001; McGaw *et al*., 2008)	Antibacterial , anti-inflammatory mutagenicity (Luseba *et al*., 2007)	-
Senecio quinquelobus DC.	Usinini (Z)	Leaves	Diarrhoea (Mlambo, 2008)	-	-
Vernonia glaberrima Welw		Leaves	Decoction for diarrhoea (De Villiers *et al*., 2010)	Antibacterial and antimalaria (De Villiers *et al*., 2010)	-
Vernonia kotschyana Sch. Bip. ex Walp. (*Baccharoides adoensis* var. *kotschyana* (Sch. Bip. ex Walp.) M.A. Isawumi, G.El-Ghazaly & B. Nordenstam)	Inyathelo (Z)	leaves	Diarrhoea (Mlambo, 2008)	Immunomodualting activity (Nergard *et al*., 2004); antibacterial activity (Deeni and Hussain, 1994)	pectic arabinogalactan (Nergard *et al*., 2004)
Vernonia natalensis Sch. Bip. ex Walp.	Uhlambihloshane, Isibhaha	Leaves, stem	Decoction for stomach cramps, nervous spasms of the stomach (Fawole *et al*.,	Anti-inflammatory (Fawole *et al*., 2009a), antimicrobial, mutagenicity	-

			2009)b; (Hutching *et al*., 1996)	(Fawole *et al*., 2009b)	
Vernonia oligocephala Sch. Bip	lihlunguhlungu	Roots	Infusion for diarrhoea (Amusan *et al*., 2007)	-	-
Vernonia myriantha Hook. F (syn*Vernonia stipulacea* Klatt)	Mululudza (V)	Roots	Diarrhoea, fever, flu, contraceptive (Bessong *et al*., 2005; Obi *et al*., 2003)	-	-
Vernonia tigna Klatt syn *V. corymbosa*	Uhlunguhlungu (Z), Phathaphathane (V)	Leaves	Diarrhoea (Mlambo, 2008)	-	-
Balanitaceae					
Balanites maughamii Sprague		leaves	Diarrhoea in cattle (Luseba and Van der Merwe, 2006; McGaw *et al*., 2008)	Antiplasmodial and cytotoxicity (Prozesky *et al*., 2001)	-
Balanophoraceae					
Sarcophyte sanguine Sparrm		whole plant	Amenorrhoea, dysentery, diarrhoea and swellings growth (Iwalewa *et al*., 2007)	Antibacterial and antifungal (Naidoo *et al*., 1992)	Eriodictyol, naringenin, triandrin, n-pinitol (ID-4-O-methyl chiroinositol), trans-p-coumaraldehyde, Exocarpic acid (13E-octadecene-9,11-diynoic acid)
Bignoniaceae					
Markhamia sessilis Sprague		Leaves	Decoction for diarrhoea (De Villiers *et al*., 2010)	Antiplasmodial and cytotoxicity (Mbatchi *et al*., 2006), antimicrobial and antimalaria (De Villiers *et al*., 2010)	-
Kigelia africana (Lam.) Benth.		Bark	Dysentery and stomach ailments (van Wyk, 2008b)	Antidiarrhoea (Akah, 1996), analgesic and anti-inflammatory (Owolabi and Omogbai, 2007), antifungal and antibacterial (Owolabi *et al*. 2007)	Verminoside and Verbascoside (Picerno *et al*., 2005)
Tecomaria capensis Spach		Bark	fever, diarrhea and dysentery, pains, sleeplessness, stomach and chest pains (Iwalewa *et al*., 2007)	Antimicrobial (Saini *et al*., 2011)	-
Bombacaceae					
Adansonia digitata L.	Muvhuyu (V)	Leaves, bark, root fruit	Fever, diarrhoea, haemoptysis, hiccup remedy (van Wyk, 2008b)	Anti-inflammatory , antiviral (Selvarani and Hudson, 2009), antihyperglycermic and hypolipidermic (Bhargav *et al*., 2009), Antimicrobial (Mulaudzi *et al*., 2011)	Epicatchin, procyanidin B2, procyanidin B5 (Kinghorn *et al*., 2011)
Bursareceae					
Commiphora harveyi (Engl.) Engl.		Leaves	Disinfectant for wound, anthelmintic and snakebite (Watt and Breyer-Brandwijk, 1962)	Antimicrobial (Suleiman *et al*., 2010)	-

Capparaceae					
Capparis tomentosa	Umqoqolo (Z), Muoba-dali (V)	Root infusions and decoctions	Diarrhoea in cattle, stomach ailments in animals (Watt and Breyer-Brandwijk, 1962, Pujol, 1990, McGaw *et al*., 2008)	Antimicrobial (Ramalivhana *et al*., 2010), antifungal (Samie *et al*., 2010)	**Stachydrine** L-form (Systolic depressant, rheumatism)
Caricaceae					
Carica papaya L.	Papawe (V)	Leaves, seed	Amoebic dysentery, fever, gastric problems, asthma, immune-stimulant (Green *et al*., 2010; Aruoma *et al*., 2006)	Antiamoebic (Tona *et al*., 1998), anthelmintic (Kermanshai *et al*., 2001)	**Alternariol Carpamine** (cardiotonic agent, CNS depressant), **Chymopapain**; **Glycerol triacetate** (antifunal and adjuvant); **Papain** ; **2,4'-Dihydroxy-3',5'-dimethoxyacetophenone** (antifungal), Benyl isothiocyanate (Kermanshai *et al*., 2001)
Caryophyllaceae					
Krauseola mossambicina (Moss.) Pax & K. Hoffm.	Isihlaza, Isihlazi		Diarrhoea (de Wet *et al*., 2010)	-	-
Celastraceae					
Elaeodendron transvaalense (Burtt Davy) R.H. Archer syn *Cassine transvaalensis*	Mulumanamana Mukuhazwhi, Umgugudo (Z)	Bark	Cough, piles, venereal diseases, diarrhoea, stomach ache, laxative (Samie *et al*., 2010)	Antimicrobial (Tshikalange *et al*., 2005), hypoglycaermic (Deutschlander *et al*., 2009), Cytotoxicity (Tshikalange and Hussein, 2010)	lup-20(30)-ene-3,29-diol , lup-20(29)-ene-30-hydroxy-3-one-(2), ψ– taraxastanonol, β-sitosterol and 4' –O-methylepigallocatechin (Tshikalange and Hussein, 2010)
Gomphocarpus fruticosus Dryand.		Leaf infusion	Diarrhoea and stomach ache in children (Hutchings *et al*., 1996; Fouche *et al*., 2008)	-	**Gomphoside** (cardiotonic agent)
Gymnosporia senegalensis (Lam.) Loes	Ubuhlangwe		Diarrhoea (de Wet *et al*., 2010)		-
Maytenus heterophylla Eckl. & Zeyh.) Robson	Isibhubu (Z), Tshiphandwa (V)	Bark and leaf infusions	Diarrhoea in stock animals (Watt and Breyer-Brandwijk, 1962; McGaw *et al*., 2008)	Antimicrobial (Orabi *et al*., 2001), anti-inflammatory and cytotoxicity (Da Silva *et al*., 2010), anticytomegalovirus (Murayama *et al*.,2007)	1β-acetoxy-9α-benzoyloxy-2β,6α-dinicotinoyloxy-β-dihydroagarofuran, β-amyrin, maytenfolic acid, 3α-hydroxy-2-oxofriedelane-20α-carboxylic acid, lup-20(29)-ene-1β,3β-diol, (−)-4'-methyl*epi*gallocatechin, and (−)-*epi*catechin (Da Silva *et al*., 2010) , pristimerin, lupeol and 2-acetylphenol-1-β-D-glucopyranosyl (1→6)-β-D-xylpyranoside (acetophenol glycoside) (Murayama *et al*.,2007)
Maytenus peduncularis (Sond.) Loes.	Mukwatule (V)	root	Backache, pain (Gonzalez *et al*., 2000)	-	-
Maytenus procumbens (L.f.) Loes.	-	-	-	-	-

Maytenus senegalensis (Lam.) Exell	Tshiphandwa (V)		Root used for chest pain, rheumatism, snakebites, diarrhoea and fever. Leaves for eye infection (Matu and van Staden, 2003)	Antimicrobial and anti-inflammatory (Matu and van Staden, 2003); anti-inflammatory and cytotoxicity (Da Silva *et al*., 2010)	**Wilforine** (insecticidal), β-amyrin, lupenone, maytenoic acid, β-sitosterol, pristimerin (Da Silva *et al*., 2010)
Maytenus undata (Thunb.) Blakelock	Tshinembane (V)	Leaves		Antimicrobial, anti-inflammatory and antioxidant (Muhammed *et al*., 2000), antimalaria (Muthaura *et al*., 2007)	3-oxo-11α-methoxyolean-12-ene-30-oic acid, 3-oxo-11α-hydroxyolean-12-ene-30-oic acid, 3-oxo-olean-9(11),12-diene-30-oic acid, 3,4-seco-olean-4(23),12-diene-3,29-dioic acid (20-epikoetjapic acid), 3,11-dioxoolean-12-ene-30-oic acid (3-oxo-18β-glycyrrhetinic acid), koetjapic acid, 12-oleanene artifact 3-oxo-11α-ethoxyolean-12-ene-30-oic acid (Muhammed *et al*., 2000)
Chenopodiaceae					
Atriplex nummularia Lindl.		Laeves, flower	Diarrhoea (Van Wyk et al, 2008)	Antitumorigenic activity (Amara *et al*., 2008)	-
Chenopodium ambrosioides L.	Unakani, Ikhambi	Aerial part	Diarrhoea (de Wet *et al*., 2010)	Antisecretory against cholera toxin (Velazquez *et al*., 2006), antiamoeba and antigardia (Calzada *et al*., 2006)	Ascaridole, quercetin, kaempferol, isorhamnetin, ambroside, malic acid, succinic acid
Clusiaceae					
Garcinia livingstonei T. Anderson	Umphimbi, Muphiphi (V)	leaves	Diarrhoea (de Wet *et al*., 2010)	Antibacterial (Kaikabo, 2008)	**Amentoflavone** (Bradykinin antagonist, anti-HIV activity, inhibitor of human cathepsin B, antiiflammatory properties), amentoflavone and 4"-methoxy amentoflavone (Kaikabo, 2008)
Combretaceae					
Combretum bracteosum (Hochst.) Brandis ex Engl.		leaves	-	anti-inflammatory, anthelmintic and antischistosomal (McGaw *et al*., 2001)	-
Combretum imberbe Wawra	Mudzwiri (V)	Root	Decoction for diarrhoea (Mathabe *et al*., 2006)	anti-inflammatory, anthelmintic and antischistosomal (McGaw *et al*., 2001), antimicrobial (Angeh *et al*., 2007)	1α, 23β-Dihydroxyl-12-Oleanen-29-oic acid-23β-O-α-4-acetylrhamnopyranoside; 1, 22-Dihydroxyl-12-Oleanen-30-oic acid; Ethyl cholesta-7, 22,25-trien-O-β-D-glucopyranoside (Angeh *et al*., 2007), imberbic acid (Katerere *et al*., 2003)
Combretum molle R. Br.ex G. Don	Mugwiti (V)	Roots	Abdominal pain, fever, snake bite, leprosy and convulsions (Bessong *et al*. ,2005; Mabogo, 1990)	anti-inflammatory, anthelmintic and antischistosomal (McGaw *et al*., 2001)	Punicalgin, 4-*epi*-sericoside, sericoside (Asres *et al*., 2001), β-D-glucopyranosyl 2α,3β,6β-trihydroxy-23-galloylolean-12-en-28-oate, combregenin, arjungenin, arjunglucoside I, combreglucoside (Ponou *et al*., 2008), mollic acid glucoside (Oyewole, 2008)
Combretum padoides Engl. & Diels				anti-inflammatory, anthelmintic and antischistosomal (McGaw *et al*., 2001); antifungal (Masoko *et al*., 2007); Antibacterial (Angeh *et al*., 2007)	1α,23β-dihydroxy-12-oleanen-29-oic-acid-23β-O-α-4-acetylrhamnopyranoside, 1,22-dihydroxy-12-oleanen-30-oic acid, 24-ethylcholesta-7,22,25-trien-O-β-D-glucopyranoside (Angeh *et al*., 2007)
Combretum vendae A.E. van Wyk		Leaves	Leprosy, ophthalmic remedy, and blood purification (Watt and Breyer-Brandwijk,	Antimicrobial (Ahmed.*et al,* 2008*;* Suleiman *et al*., 2010)	apigenin (Eloff *et al*., 2008)

			1962)		
Combretum woodii Dummer				anti-inflammatory, anthelmintic and antischistosomal (McGaw *et al.*, 2001); antifungal (Masoko *et al.*, 2007)	Combretastatin B5 (Eloff *et al.*, 2005)
Combretum zeyheri Sond	Mufhatela-thundu, Mufhatela (V)	Root infusion	Bloody diarrhoea (Hutchings *et al.*, 1996; Fouche *et al.*, 2008)	Antibacterial (Breytenbach and Malan, 1989)	
Terminalia laxiflora Engl.		Leaves	Decoction for diarrhoea (De Villiers *et al.*, 2010)	Antifungal (Batawila *et al.*, 2005)	
Terminalia phanerophlebia Engl.		Root bark	Diarrhoea and colic (Iwalewa *et al.*, 2007)	Antimicrobial (Shai *et al.*, 2008a)	
Terminalia sericea Burch. ex DC.	Mususu (V), Ikonono	Leaves roots	Wound (Luseba and Van der Merwe, 2006); diarrhoea (Van der Merwe *et al.*, 2001; McGaw *et al.*, 2008)	Antimicrobial, antidiabetic, cytotoxicity (Moshi and Mbwambo, 2005), COX-1 and COX-2 assays (Eldeen *et al.*, 2006).	Anolignan B (Eldeen *et al.*, 2006), Termilignan B, Arjunic acid (Eldeen *et al.*, 2008), 3'5'-dihydroxy-4-(2-hydroxy-ethoxy) resveratrol-3-O-β-rutinoside, resveratrol-3-β-rutinoside glycoside, 3',4,5'-Trihydroxystilbene (resveratrol), arjungenin (Joseph *et al.*, 2007)
Convolvulaceae					
Ipomoea batatas (L.) Lam.	Sweet potato	Leaves	Decoction for diarrhoea (De Villiers *et al.*, 2010)		**4,5-Di-transcaffeoyldenoic acid** (antioxidant), **6-O-caffeoylsophorose** (α-glucosidase inhibitor, antioxidant); **3,5-Di-O-caffeoylquinic acid** (active against HIV-1 integrase, antiviral, antihepatotoxic activity); **Petrovin B** (antibacterial and antitumour)
Cornaceae					
Curtisia dentata (Burm.f.) C.A.Sm.= *C. faginea* Assegaai	Umlahleni (X, Z) Unsirayi (X), Umgxina	Bark, root	Diarrhoea, stomach ailments (Bisi-Johnson *et al.*, 2010)	Antimicrobial (Shai *et al* , 2008a, Shai *et al.*, 2009)	Lupeol, betulinic acid, ursolic acid, and 2α-hydroxyursolic acid (Shai *et al*, 2008b)
Crassulaceae					
Crassula ovata (Mill.) Druce	Karkay, karkey (K)	Fresh leave	Diarrhoea (van Wyk, 2008)	-	-
Crassula tetragona L.	Karkay, karkey (K)	Fresh leave	Diarrhoea (van Wyk, 2008)	-	-
Cucurbitaceae					
Cucumis hirsutus Sond.		Leaves, root	Decoction for abdominal pains, diarrhoea (Fawole *et al.*, 2009); Hutching *et al.*, 1996)	-	-
Mormodica balsamina L.	Lubavhe (V)	Whole plant	Diabetes, childhood diarrhoea (Samie *et al.*, 2009)	Shigellocidal (Iwalokun *et al.* 2001); Cytotoxicity and antiamoebic (Samie *et al*, 2009)	Balsaminapentaol A, Balsaminol A, Balsaminol B, Cucurbalsaminol A, Cucurbalsaminol B, cucurbita-5,23(*E*)-diene-3*β*,7*β*,25-triol, karavilagenin E (Ramalhete *et al.*,(2009)
Ebenaceae					
Diospyros lycioides Desf.	Umbulwa (Z)	Bark, root	Decoction for bloody faeces and dysentery (Fawole *et al.*, 2009); (Hutching *et al.*,	-	Hydroxyisodispyrin (cytotoxic agent)

			1996)		
Diospyros mespiliformis	Musuma	Bark and leaves	Dysentery, fever, ringworm, skin infection, wound healing (Samie *et al.*, 2010)		Diosquinone, plumbagin (Lajubutu *et al.*,1995)
Diospyros pallens (Thunb.) F. White		Root and stem	Stomach arch; diarrhoea (van Wyk, 2008)	-	-
Euclea crispa Thunb Gurke	Ungwali (Z),	leaves	Dysmenorrhoea (Steenkamp, 2003)		
Euclea natalensis A. DC	Mutangule-thavha (V), Umzimane (Z)	root	oral health care, for chest complains, bronchitis, pleurisy, chronic asthma, urinary tract infections, venearal diseases (Lall and Meyer, 2001) , Infertility and abortifacient (Arnold and Gulumian, 1984)	Antibacterial (Weigenand *et al.*, 2004), antimycobacterium (Lall and Meyer, 2001)	Octahydroeuclein, 20(29)-lupene-3β-isoferulate, shinanolone, lupeol, betulin (Weigenand *et al.*, 2004); diospyrin (Lall and Meyer, 2001)
Euphorbiaceae					
Antidesma venosum E. Mey. ex Tul.	Mupalakhwali (V)	Leaf	Decoction for abdominal cramps and dysentery (Fawole *et al.*, 2009; Hutching *et al.*, 1996)	Antimicrobial (Fawole *et al.*, 2009)	-
Bridelia micrantha (Hochst.) Baill	Munzere (V)	Bark, leaves, roots	Stomach ache, diarrhoea, abortifacient (Bessong *et al.*, 2005; Lin *et al.*, 2002), Gastro-intestinal ailments, painful joints, retained placenta, diabetes mellitus, syphilis prehepatic jaundice, tape worm abdominal pain, conjunctivitis, headache, scabies, bloody diarrhoea, dysentery, emetic, wound infection, coughs, threadworms, tonic for children, sore eyes, epigastric pain, relief of headache, purgative (Ngueyem *et al.*, 2009), diabetes mellitus (Abo et al., 2008)	Antidiarrhoea (Lin *et al.*, 2002), beta-lactamase inhibition (Gangoue-Pieboji *et al.*, 2007); antimalarial (Abo and Ashidi (1999). *n*-butanol fraction of methanolextract has IC50 of 7.3_g/ml against the RNA-dependent DNA polymerization (RDDP) function of HIV-1 RT (Bessong et al., 2006)	Taraxerol, gallic and ellagic acid, friedelin, delphinidin, methyl salicylate (Ngueyem *et al.*, 2009)
Bridelia mollis	Mukumbakumba	Leaves	Dysentery, burning and itching (Samie *et al.*, 2010)	Antifungal (Samie *et al.*, 2010)	
Euphorbia cooperi N. B. Br. Ex. Berger	Umhlonhlo (X)	Root bark	Diarrhoea, stomach disorder (Bisi-Johnson *et al.*, 2010)	-	-
Euphorbia hirta L.		Leaves	Decoction for diarrhoea (De Villiers *et al.*, 2010); dysentery, gonorrhoea, jaundice, pimples, digestive problems and tumours, antibacterial, anti-inflammatory, antimalarial, galactogenic, antiasthmatic, antidiarrheal, anticancer, antioxidant, antiferlity, antiamoebic, and antifungal activities (Kumar *et al.*, 2010)	Antiamoebic , spasmolytic (Tona *et al.*, 2000), Antidiarrhoeal (Galvez *et al.*, 1993)	β-amyrin, 24-methylenecycloartenol, β-Sitosterol, Quercitrin (Galvez *et al.*, 1993). Quercitol, gallic acid, afzelin, quercitrin, myricitrin, rutin, gallic acid, quercitin, euphorbin-A and ephorbin-B, euphorbin-C, euphorbin-D, β-amyrin, 24-methylenecycloartenol, β-sitosterol, heptacosane, n-nonacosane, shikmic acid, tinyatoxin, choline, camphol, and quercitol (Kumar *et al.*, 2010)
Jatropha zeyheri Sond.	Xidomeja	Roots	General ailments, diarrhoea (Luseba and Van der Merwe, 2006; McGaw *et al.*, 2008)	Antimicrobial and Antifungal (Dekker *et al,* 1987)	Jaherin (Dekker *et al,* 1987)

Ricinus communis L.	Mupfure (T)	leaves	Wound and sores, asthma arthritis, flu, fever, tuberculosis, toothache, diarrhoea, antihelmentic (Bessong *et al*., 2005; Grierson and Afolayan, 1999)	-	-
Spirostachys africana Sond	Morekhure (S)	Wood	Stomach ulcers, acute gastritis, headache, rashes, boil, emetic, purgative, diarrhoea, dysentery (Verschaeve and Van Staden, 2008)	Antibacterial and cytotoxicity (Mathabe *et al*., 2008)	-
Fabaceae					
Acacia burkei Benth	umkhaya		Diarrhoea (de Wet *et al*., 2010)	-	-
Acacia karoo Hayne	uMnga (X), Umunga (Z)	Bark, leaves	Diarrhoea, intestinal parasites in goats, sheep, poultry and pig (Dold and Cocks, 2001; McGaw *et al*., 2008) fractures and diarrhoea (Van der Merwe *et al*., 2001)	Anti-inflammatory (Adedapo *et al*., 2008); Acute toxicity (Adedapo *et al*, 2008)	-
Acacia mearnsii De Wild Blackwood	Ublekwana (X) Udywabasi (X, Z) Indywabasi	Bark	Infusion for diarrhoea and dysentery (Bisi-Johnson *et al*., 2010)	Protective against acrolein-induced oxidative damage (Huang *et al*., 2010)	Robinetinidol-(4β→8)-epigallocatechin 3-O-gallate (Huang *et al*., 2010)
Acacia robusta E. Meyer	Umngamanzi (Z)	leaves	Diarrhoea (Mlambo, 2008)	Antifungal (Hamza *et al*., 2006)	
Acacia sieberiana DC.var *woodii* (Burtt Davy) Keay & Brenan	Musaunga, Muunga-luselo (V)	Bark	Enemas, antiseptic, fever, stomach ache, tapeworm, astringent, haemostatic, diarrhoea (Verschaeve and Van Staden, 2008)	Mutagenicity , antimutagenicity; antibacterial, antiinflammatory, anti-cholinesterase and mutagenic effects (Eldeen *et al*., 2005)	-
Acacia tortilis (Forssk.) Hayne	Muunga-khanga, Muswu (V)		Diarrhoea (Van der Merwe *et al*., 2001; McGaw *et al*., 2008)		-
Bauhinia bowkeri Harv	uMdandlovu	Leaves, bark	Induce vomiting (Ndawonde *et al*., 2007)	-	-
Bauhinia galpinii N. E. Br	Mutswiriri (V), Umhuwa (Z)	Bark, leaves	Diarrhoea, infertility (Samie *et al*., 2010), infertility (Arnold and Gulumian, 1984), amenorrhoea (Van Wyk and Gericke, 2000)	Antimutagenic (Reid *et al*., 2006); antioxidant and cytotoxicity of leaf extracts (Aderogba *et al*., 2007); Anticampylobacterial, antiamoebic and cytotoxicity of root extract(Samie *et al*.,2009)	Quercetin-3-O-β-glactopyranoside, Myricetin-3-O-β-glactopyranoside, 2"-O-rhamnosylvitexin (Aderogba *et al*., 2007)
Bauhinia petersiana Bolle	Mushakule (V)	root	Cold (Coates-Palgrave, 2002); infertility and dysmenorrhoea (Van Wyk and Gericke, 2000)	-	-
Bauhinia variegata Linn		Leaves, bark	Diabetes, goiter, dysentery, diarrhoea (Parekh and Chanda, 2007)	Anti-inflammatory (Rao *et al*., 2008); Immunomodulator (Ghaisas *et al*., 2009)	kaempferol, ombuin, kaempferol 7,4'-dimethyl ether 3-O-β -D-glucopyranoside , kaempferol 3-O-β -D-glucopyranoside (4), isorhamnetin 3-O-β -D-glucopyranoside, hesperidin, 3β-trans-(3,4-dihydroxycinnamoyloxy)olean-12-en-28-oic acid (Rao *et al*., 2008)

Dichrostachys cinerea (L.) Wight and Am.	Murenzhe (V)	Bark	Diarrhoea and steaming to get ride of acne (Mlambo, 2008)	spasmodic in guinea-pig isolated trachea (Aworet-Samseny *et al*., 2011)	dichrostachines A-R (Long *et al*., 2009)
Elephantorrhiza burkei Benth.	Umdabu (Z), Tshisese-thavha, Tshisesevhufa (V)	root	abdominal pains, diarrhoea, coughs, bacterial infections (Iwalewa *et al*., 2007)	Antimicrobial (Mathabe *et al*., 2006)	Triterpenoids, α-amyrim, β-sitosterol, alkaloids and saponin
Elephantorrhiza evoluta (Burch.) Skeels	iNtololwane (X, Z)	Roots, aerial part and bulb	Diarrhoea and dysentery in cattle, horse and humans (Watt and Breyer-Brandwijk, 1962; McGaw *et al*., 2008)	-	-
Elephantorrhiza elephantina (Burch.) Skeels	Leshitsana	Stem rhizome	Decoction for diarrhoea (Mathabe *et al*., 2006)	Antimicrobial (Mathabe *et al*., 2006), antiparasitic (Naidoo *et al*., 2006), antibabesia (Naidoo *et al*., 2005	
Eriosema psoraleoides (Lam.) G. Don		Leaves	Decoction for diarrhoea (De Villiers *et al*., 2010)	Antimicrobial (Khan *et al*., 2000)	
Erythrina latissima E. Mey	Muvhale (V)		Sores (Coates-Palgrave, 2002)		erysotrine, erysodine, syringaresinol, vanillic acid, (+)-10,11-dioxoerysotrine, 2-(5'-hydroxy-3'-methoxy phenyl)-6-hydroxy-5-methoxybenzofuran, 7,3'-dihydroxy-4'-methoxy-5'-(γ,γ-dimethylallyl)isoflavone (erylatissin A) (Wanjala *et al*., 2002), 7,3'-dihydroxy-6",6"-dimethyl-4",5"-dehydropyrano [2",3": 4',5']isoflavone (erylatissin B), (−)-7,3'-dihydroxy-4'-methoxy-5'-(γ,γ dimethylallyl)flavanone (erylatissin C) (Chacha *et al*., 2004)
Indigofera daleoides Benth. ex Harv & Sond		Whole plant	Decoction for diarrhoea (Mathabe *et al*., 2006)	Antimicrobial (Mathabe *et al*., 2006)	(6,2-*O*-[3-nitropropanoyl-β-D-glucopyranose]), (6,3',4'-trihydroxyflavan 5'-O-glucopyranoside) (Mathabe *et al*., 2009)
Indigofera jucunda Schrire syn *Indigofera cylindrical sensu* E. Mey		Root	Intestinal worm (Coates-Palgrave, 2002)	-	-
Indigofera sessilifolia DC.	iKhubalo	Roots	Diarrhoea in calves (Dold and Cocks, 2001; McGaw *et al*., 2008)	-	-
Mucuna coriacea Baker	Vhaulada	Roots	Fever, diarrhoea (Bessong *et al*., 2005)	Antimicorbial (Samie *et al*., 2009)	N.A
Peltophorum africanum Sond.	Musese (T)	Bark , root bark	Tonic, diarrhoea (Van der Merwe *et al*., 2001; McGaw *et al*., 2008)	Anti parasitic (Bizimenyera *et al*., 2006), anti HIV (Bessong *et al*., 2005)	Catechin, gallotannin, bergenin (Bessong *et al*., 2005)
Rhynchosia adenoids E. & Z.		Roots	Decoction for rheumatic pains, menstrual pains and dysentery (Shale *et al*., 1999)	Cyclooxygenase inhibitory (Jager and Van Staden, 2005)	
Senna italic Mill.	Ximbangam bangana	Bark, roots	Diarrhoea and gallsickness diarrhoea, (Luseba and Van der Merwe, 2006; McGaw *et al*., 2008)	-	--

Senna occidentalis (L) Link	Ikhoshokhosho	Leaves, root	Diarrhoea (de Wet *et al.*, 2010)		
Schotia brachypetala Sond.	Mulubi (V)	Bark	Diarrhoea (Mathabe *et al.*, 2006), root for dysentery and diarrhoea (Hutching *et al.*, 1996)	Antibacterial (McGaw *etal.*, 2002)	Linolenic acid and methyl-5,11,14,17-eicosatetraenoate (McGaw *etal.*, 2002)
Schotia latifolia Jacq.	Umgxam	bark	Decoction for diarrhoea (Appidi *et al.*, 2008)	Antibacterial (Masika *et al.*, 2004)	Epicathechin and catechin (Masika *et al.*, 2004)
Zornia milneana	Lukandulula (V)	Whole plant	Dysentery and diarrhoea (Samie et al., 2005)	Anticampylobacterial and antiamoebic (Samie *et al.*,2009)	-
Flacourtiaceae					
Oncoba spinosa Lam		root	Dysentery bladder problem (Verschaeve and Van Staden, 2008)	Mutagenicity , antimutagenicity, Epilepsy and convulsion (Risa *et al.*, 2004)	-
Gentianaceae					
Chironia baccifera L.			treat acne, sores and diarrhoea (Watt and Breyer-Brandwijk, 1962; van Wyk *et al.*, 1997)	Antibacterial (Thring *et al.*, 2007)	-
Geraniaceae					
Geranium incanum Burm. f.	Isikhwali (Z)	leaves	Diarrhoea (Amabeoku, 2009; Van Wyk *et al.* 1997)	Antidiarrhoearic (Amabeoku, 2009); antimicrobial and cytotoxicity (Babajide *et al.*, 2010)	-
Monsonia emarginata (L.f.) L'Hèr.		Herb and root	Diarrhoea, dysentery, cold and inflammation (van Wyk, 2008)	-	-
Monsonia burkeana Planch. Ex Harv.		Herb and root	Diarrhoea, dysentery, cold and inflammation (van Wyk, 2008)	Antioxidant (Mamphiswana *et al.*, 2010)	-
Pelargonium antidysentericum (Eckl.& Zeyh.) Kostel		Tubers	Used as astringent, diarrhoea, dysenteric fever (Brendler and van Wyk, 2008)	-	-
Pelargonium luridum (Andr.) Sweet	Umsongelo (X) ishwaqa	Leaf, root	Diarrhoea, dysentery, fever and colic (Brendler and van Wyk, 2008)	-	-
Pelargonium reniforme Curtis	iNtololwana, uVendle	Tuberous root	Diarrhoea and dysentery (van Wyk, 2008)	Antibacterial, antifungal and antioxidant (Adewusi and Afolayan, 2009a), Acute toxicity (Adewusi and Afolayan, 2009b)	scopoletin, umckalin, 5,6,7-trimethoxycoumarin, 6,8-dihydroxy-5,7-dimethoxycoumarin, (+)-catechin, gallic acid (Kayser and Kolodziej, 1997)
Pelargonium sidoides DC.	Umsongelo (X)		Tuberculosis, diarrhoea (Brendler and van Wyk, 2008)	Immunomodulatory (Kayser *et al.*, 2001), antibacterial, antifunfal and antitubercular (Mativandlela *et al.*, 2006)	scopoletin, umckalin, 5,6,7-trimethoxycoumarin, 6,8-dihydroxy-5,7-dimethoxycoumarin, (+)-catechin, gallic acid (Kayser and Kolodziej, 1997)
Pelargonium triste		Tuberous	Diarrhoea and dysentery (van Wyk, 2008)	-	-

(L.) L'Hèr.		root			
Hyacinthaceae					
Eucomis autumnalis (Mill.) Chitt.	Ubuhlungu becanti Isithithibala (X) Umathunga (Z)	Bulb	Stomach ache, diarrhoea, back pain, healing of fractures (Bisi-Johnson *et al.*, 2010)	Anti-inflammatory (Zschocke et al., 2000)	-
E. regia (L.) L'Herit			Veneral diseases, lumbago, diarrhoea, respiratory conditions especially coughs, biliousness and to prevent premature childbirth (Watt and Breyer-Brandwijk, 1962)	COX-1 assay (Taylor and van Staden, 2001)	-
Ledebouria revoluta (L.f.) Jessop	iKreketsana (X)	Bulb	Bulb infusion for diarrhoea in goat, leavf decoction for gallsickness (Dold and Cocks, 2001; McGaw *et al.*, 2008)		(3R)-5,7-dihydroxy-3-(4'-methoxybenzyl)-4-chromanone, (3R)-5,7-dihydroxy-3-(4'-hydroxybenzyl)-4-chromanone, 3R)-5-hydroxy-7,8-dimethoxy-3-(4'-hydroxybenzyl)-4-chromanone, (3R)-5,7-dihydroxy-8-methoxy-3-(4'-hydroxybenzyl)-4-chromanone (Moodley *et al.*, 2006)
Schizocarphus rigidofolius	Ingcino (S)	leaves	Infusion for diarrhoea (Amusan *et al.*, 2007)	-	-
Scilla nervosa (Burch.) Jessop	Umagaqana, magaqana (X) Imbizankulu ingema (Z)	Root, bulb	All purpose herb. Diarrhoea, tuberculosis (Bisi-Johnson *et al.*, 2010)	-	-
Hydnoraceae					
Hydnora africana	Ubuklunga (X) Umavumbuka (Z) Umafumbuka (X)	Fruits, tuber leaves	Diarrhoea, dysentery (Bisi-Johnson *et al.*, 2010)	-	-
Hypoxidaceae					
Hypoxis latifolia Hook.	Inongwe Ilabateka (X)	Tuber	Decoction for diarrhoea (Bisi-Johnson *et al.*, 2011)	Antibacterial, antifungal (Buwa and Van Staden, 2006)	
Hypoxis hemerocallidea Fisch. & C. A. Mey	Inongwe Ilabateka (X)	Tuber	Decoction for diarrhoea (Ojewole *et al,* 2009)	Antinociceptive, anti-inflammatory and antidiabetic (Ojewole, 2006), Antidiarrhoeal, acute toxicity test (Ojewole *et al,* 2009)	
Iridaceae					
Crocosmia paniculata (Klatt.) Goldbl.	Undwendweni (Z)	corms	Diarrhoea in bovine (Watt and Breyer-Brandwijk, 1962; McGaw *et al.*, 2008)	-	-
Gladiolus dalenii van Geel		corm	Dysentery, diarrhoea, stomach cramps (Fawole *et al.*, 2009; Hutching *et al.*, 1996)	Anti-inflammatory (Fawole *et al.*, 2009Ndhalala), amoebicidal (Moundipa *et al.*, 2005), Antimicrobial and mutagenicity (Fawole *et al.*, 2009 Finnie)	-

Gladiolus sericeo-villosus Hook. F	Umnunge (X), Umlunge (Z)	Corm	Decoction fro dysentery, cold, tuberculosis diarrhoea (Bisi-Johnson *et al.*, 2010)	-	-
Watsonia densiflora Bak.		Corm	Diarrhoea in calves (Watt and Breyer-Brandwijk, 1962; McGaw *et al.*, 2008)	Antibacterial, antifungal, acetylcholinestarase inhition, mutagenicity, COX 1and 2 (Ndhala *et al.*, 2010)	
Watsonia tabularis Bak		corm	Diarrhoea in human and calves (Fawole *et al.*, 2009; Hutching *et al.*, 1996)	Antimicrobial and mutagenicity (Fawole *et al.*, 2009 Finnie)	
Lamiaceae					
Ballota africana (L.) Berth.					
Cissus quandrangularis (Linn)	Isinwasi (Z), Nyangala (T)	Root, stem	Burns, wounds, gastrointestinal complaints, backache, body- and febrile pain, malaria (Lin *et al.*, 1999; Hutchings et al., 1996)	Antibacterial, anti-inflammatory and mutagenicity (Luseba, *et al.*, 2007)	
Leonotis leonurus (L.) R.Br	Imunyamunya (Z)	leaves and stem bark	feverish headache, dysentery, coughs and colds, and haemorrhoids (Iwalewa *et al.*, 2007)	Anticonvulsant (Bienvenu *et al.*, 2002), antinociceptive, anti-inflammatory and hypoglycaemic activities (Ojewole, 2005)	1,2,3-trihydroxy-3,7,11,15-tetramethylhexadecan-1-yl-palmitate, succinic acid, uracil, luteolin 7-O-glucoside, acteoside, geniposidic acid (Agnihotri *et al.*, 2009)
Leucas capensis (Benth.) Engl.	uPhiphiyo	leaves	Decoction with *Aloe forex* and *Brachylaena ilicifolia* for diarrhoea in lambs (Dold and Cocks, 2001)	-	-
Mentha longifera (L.) L.		Leaf	Anti-diarrhoea (Naseri *et al.*, 2008)	Spasmolyte (Naseri *et al.*, 2008)	-
Rotheca myricoides (Hochst.) Steane & Mabb.		Root bark	Fever and diarrhoea in cattle (Verschaeve and Van Staden, 2008)	Mutagenicity and antimutagenicity (Verschaeve and Van Staden, 2008)	-
Salvia africana-caerulea L.		Leaf	Coughs, colds, women ailments; diarrhoea (van Wyk, 2008)	Antimicrobial, antioxidant, anti-inflammatory, antiplasmodial, cytotoxicity and antituberculosis (Kamatou *et al.*, 2006)	-
Salvia repens Burch. Ex. Benth		Roots, leaves, whole plant	Sores on the body, stomach problems, diarrhoea (Kamatou *et al.*, 2008)	Antimicrobial, antioxidant, anti-inflammatory, antiplasmodial, cytotoxicity and antituberculosis (Kamatou *et al.*, 2006)	-
Tetradenia riparia (Hochst.) Codd	Iboza (Z)	leaves	Cough, sore throats, malaria, dengue, dropsy, fever, diarrhoea, haemoptysis, boils, mumps, induce drowsiness (Verschaeve and Van Staden, 2008)	Mutagenicity , antimutagenicity (Verschaeve and Van Staden, 2008); Antibacterial, antifungal, acetylcholinestarase inhition, mutagenicity, COX 1and 2 (Ndhala *et al.*, 2010)	-
Teucrium riparium Hochst	umnunu	Root	Infusion for diarrhoea (Amusan *et al.*, 2007)	-	-

Lauraceae					
Ocotea bullata (Burch.) Baill.		Bark	Headache, infantile diarrhoea, stomach problems, emetic for emotional and nervous disorder (Verschaeve and Van Staden, 2008)	Mutagenicity , antimutagenicity (Verschaeve and Van Staden, 2008), anti-inflammatory (Zschocke *et al*., 2000)	Ocobullenone, iso-ocobullenone, sibyllenone (Zschocke *et al*., 2000)
Loganiaceae					
Strychnos henningsii Gilg.	uMnonono, Umqalothi (Z)	Bark infusion	Heartwater and diarrhoea in cattle (Dold and Cocks, 2001; McGaw *et al*., 2008)	-	-
Loganiaceae					
Sida alba Forrsk		Leaves	Diarrhoea and dysentery (Samie et al., 2005)	Antibacterial (Samie et al., 2005)	-
Malva parviflora L.	Ujongilanga	leaves	Decoction for diarrhoea (Appidi *et al*., 2008)	Antibacterial and anti-inflammatory (Shale *et al*., 2005)	-
Melastomataceae					
Dissotis princeps (Kunth) Triana		Leaves	Infusion for diarrhoea and dysentery (Fawole *et al*., 2009; Hutching *et al*., 1996)	Anti-inflammatory (Fawole *et al*., 2009), Antimicrobial and mutagenicity (Fawole *et al*., 2009)	-
Meliaceae					
Ekebergia capensis Sparrm		Root, bark	Stomach and intestinal complaints, dysentery, heart burn, purgative, kidney problem, indigestion (Verschaeve and Van Staden, 2008)	Mutagenicity , antimutagenicity (Verschaeve and Van Staden, 2008), antiplasmodial (Murata *et al*., 2008)	Ekersenin, 4,6-dimethoxy-5-methylcoumarin, oleanolic acid, 3-epioleanolic acid, oleanoic acid (15), 3,11-dioxoolean-12-en-28-oic acid, melliferone, 3-oxo-11,13(18)-oleandien-28-oic acid, ekeberin A, (Z)-volkendousin, ekeberin B, 7-deacetoxy-7-oxogedunin, 7-acetylneotrichilenone, proceranolide, mexicanolide, swietenolide, methylangolensate, ekeberins C1, C2, and C3, 2,3,22,23-tetrahydroxy-2,6,10,15,19,23-hexamethyl-6,10,14,18-tetracosatetraene (3R,22R), 2-hydroxymethyl-2,3,22,23-tetrahydroxy-2,6,10,15,19,23-hexamethyl-6,10,14,18-tetracosatetraene (2R,3R,22R), ekeberins D1, D2, D3, D4, and D5 (Murata *et al*., 2008)
Melia azedarach L.	Umsilinga (Z)	Leaves	Diarrhoea (de Wet *et al*., 2010)		
Trichilia dregeana Sond.	Umkhuhlu (Z)	Leaves		antibacterial, antiinflammatory, anti-cholinesterase and mutagenic effects (Eldeen *et al*., 2005)	cycloart-23-ene-3,25-diol (Eldeen *et al*., 2007)
Trichilia emetica Vahl.	Umkhuhlu (Z)	Leaves	Diarrhoea (de Wet *et al*., 2010)	Antimicrobial, antioxidant, anti-inflammatory, antimalarial, cytotoxicity (Komane et al., 2011)	sendanin, trichilinin, trichilin A, trichilin B, trichilin C, trichilin D, trichilin E, dregeana, nymania 1, rohituka, rohituka, rohituka, Trichilia substance Tr-A, Trichilia substance Tr-B, Trichilia substance Tr-C and seco-A-protolimonoid (Komane et al., 2011)
Menispermaceae					
Albertisia delagoensis (N.E.	Umgandanganda ,ungandingandi	Root	Diarrhoea , dysentery, cough, colic, bloody stool (De Wet and van Wyk, 2008)	Antiplasmodial and cytotoxicity (De wet *et al*., 2007)	

Br.) Forman					
Antizoma angustifolia (Burch.) Miers ex Harv		Root	Diarrhoea , dysentery, cough, colic, bloody stool (De Wet and van Wyk, 2008)	-	-
Cissampelos capensis (L.f.) Diels	Umbombo (Z)	Root, rhizome	Purgative, tincture for dysentery (van Wyk, 2008)	-	-
Cissamperos hirta Klotzch	Umanyokane, khalimelo (Z)		Diarrhoea (de Wet *et al.*, 2010)	-	-
Cissampelos mucronata A. Rich.		Root	Diarrhoea (Giess and Snyman, 1986; Von Koenen, 2001)	Anti-ulcer (Akah and Nwafor, 1999), sedative (Akah *et al.*, 2002), Antiplasmodial (Tshinbagu *et al.*, 2003)	Bisbenzylisoquinone alkaloid (Tshinbagu *et al.*, 2003)
Cissampelos torulosa E.Mey	Lukandulula (V)	Leaves	Diarrhoea and dysentery, sore throat (Mabogo, 1990; Samie et al., 2005)	Antiamoebic (Samie *et al.*, 2009), antibacterial (Samie *et al.*, 2005)	-
Moraceae					
Ficus capensis Thunb.	Infusion	Fruit	Diarrhoea (Pallant and Steenkamp, 2008)	intestinal motility modulation (Ayinde and Owolabi, 2009)	-
Ficus craterostoma Mildbr. & Burret	Muumo (V), inTendekwane, umThombe(X)		Stomach-ache (Bhats and Jacobs , 1995)	-	-
Ficus glumosa Delile		Bark	Decoction for diarrhoea (Venter and Venter , 2002)	-	-
Ficus sur Forssk	Umkhiwane (Z)	Leaves	Diarrhoea (Mlambo, 2008)	Spasmolytic and gastrointestinal protection (Kunle *et al.*, 1999)	-
Myrtaceae					
Psidium guajava L.	Ugwava (X, Z)	Leaves	Infusion for bloody diarrhoea (Bisi-Johnson *et al.*, 2010)	Antidiarrhoeal Tona et al., 1999; Lutterodt, 1992); antispasmolytic (Conde et al., 2003), antirotavirus (Goncalves et al., 2005), antimicrobial intestinal adhesion (Coutino et al., 2001)	Limonene, copaene, Asiatic acid, β-carotene, morin-3-O-α-L-arabinopyranoside, avicularin, gauijaverin, quercitin ellargic acid (Gutierrez *et al.*, 2008)
Syzygium cordatum Hochst. Ex. C. Krauss	Umdoni, Mutu (V)	Leaves, bark	Respiratory disorders, tuberculosis, stomach complaints, emetics, diarrhoea, cold, fever (Verschaeve and Van Staden, 2008)	Mutagenicity , antimutagenicity (Verschaeve and Van Staden, 2008); antimycobacterium (Mativandlela *et al.*, 2008); Antiescherichia (Sibandze *et al.*, 2010)	-
Syzygium paniculatum Gaertner	-	-	-	--	-
Olacaceae					
Ximenia caffra Sond	Mutswili (V)	leaves	Diarrhoea and dysentery (Green *et al.*, 2010; Fabry *et al.*, 1996)	Antigardial (John *et al.*, 1995), Antiamoebic (Samie *et al.*, 2009),	

				antifungal (Samie *et al*., 2010)	
Punica granatum L.	iRharnathi (X)	Fruit rind, roots	Diarrhoea and dysentery (van Wyk, 2008; Dold and Cocks, 2000)	Antidiarrhoeal (Pillai, 1992; Qnais *et al*., 2007), Anti-inflammatory (Lansky and Newman, 2007)	Ellagitannins, anthocyanins, flavone glucosides, flavones, flavonol, flavonol glucosides, hydroxycinnamic acid, hydroxybenzoic acid, flavan-3-ols, alkaloids, sterol, triterpenoids (Lansky and Newman, 2007)
Oleaceae					
Olea europaea L. Subsp africana (Mill.) P.S.Green	Uzintlwa (X), uMnquma (X)		Anti-hypertensive, diuretic, tonic, diarrhoea, sore throat (Amabeoku and Bamuamba, 2010)	Antidiarrhoeal (Amabeoku and Bamuamba, 2010)	-
Orchidaceae					
Polystachya ottoniana Rchb.f.			Diarrhoea (Chinsamy *et al*., 2010)	-	-
Pedaliaceae					
Ceratotheca triloba (Bernh.) Hook	Udonqabathwa (Z)	Leaf	Infusion for diarrhoea and gastrointestinal cramps (Watt and Breyer-Brandwijk, 1962; Roberts, 1990)	5-lipooxygenase inhibitory and antioxidant (Akula and Odhav, 2008), α-amylase inhibitory (Odhav *et al*., 2010).	-
Plantaginaceae					
Plantago major L.		Seed, root	Diarrhoea (van Wyk, 2008)	Antidiarrhoeal (Atta and Mouneir, 2005), Hepatoprotective and anti-inflammatory (Turel *et al*., 2007), wound healing activity, anti-inflammatory, analgesic, antioxidant, weak antibiotic, immuno modulating and antiulcerogenic activity (Samuelsen, 2000)	Indicain, plantagonin, baicalein, hispidulin, plantaginin, aucubin, fumaric acid, syringic acid, vanillic acid, *p*-hydroxy benzoic acid, ferulic acid, *p*-coumaric acid, gentisic acid, salicylic acid, benzoic acid, cinnamic acid oleanolic acid, ursolic acid, 18β-glycyrrhetinic acid and sitosterol (Samuelsen, 2000)
Plantago lanceolata L.		Seed	Diarrhoea (van Wyk, 2008)	-	-
Plumbaginaceae					
Plumbago auriculata	uTshintshini	Roots	Diarrhoea in cow (Dold and Cocks, 2001; McGaw *et al*., 2008)	Antibacterial and anti cancer (Bisi-Johnson *et al*., 2011)	-
Polygonaceae					
Rumex lanceolatus Thunb	Idololenkonyane (Z), Idolonyana (X)	Roots	Infantile diarrhoea, tapeworm, wound and sores (Dold and Cocks, 2000)	-	-
Rumex obtusifolius	Idololenkonyane (X, Z)	leaves	Diarrhoea (Bisi-Johnson *et al*., 2010)	-	-
Portulaceae					
Portulacaria afra Jacq.	Umndibili (Z)	Leaves	Diarrhoea (Mlambo, 20080	-	-
Proteaceae					
Protea caffra Meisn.	Tshidzungu (V)	Root bark decoction	Calves with bloody diarrhoea (Hutching *et al*., 1996)	-	-

Protea nitida Mill.		Bark	Astringent for diarrhoea (van Wyk, 2008)	-	-
Protea simplex		Root, bark	Decoction and infusion for diarrhoea, dysentery, stomach pain in human (Fawole *et al.*, 2009; Hutching *et al.*, 1996)	Anti-inflammatory (Fawole *et al.*, 2009Ndhalala), Antimicrobial and mutagenicity (Fawole *et al.*, 2009 Finnie)	-
Protea welwitschii Engl.			Dysentery, diarrhoea in calves and humans (Watt and Breyer-Brandwijk, 1962; McGaw *et al.*, 2008)	-	-
Punicaceae					
Punica granatum L.	Mokgranata	Root	Decoction for diarrhoea (Mathabe *et al.*, 2006)	-	-
Rhamnaceae					
Ziziphus mucronata Willd.	Mukhalu, Mutshetshete (V)	Leaves, bark, roots	Boils, sores, grandular swelling, diarrhoea, dysentery, cough (Verschaeve and Van Staden, 2008; Green *et al.*, 2010)	Anti-inflammatory (Fawole *et al.*, 2009Ndhalala), Antimicrobial and mutagenicity (Fawole *et al.*, 2009 Finnie	-
Ziziphus zeyheriana Sond.		Root-stock	Diarrhoea, internal parasites, general ailments (Van der Merwe *et al.*, 2001; McGaw *et al.*, 2008)	-	-
Rosaceae					
Prunus africana (Hook.f) Kalkman Red Stinkwood	Umkhakhazi (X), Umkakase (X)	Root	Diarrhoea, abdominal ailments (Bisi-Johnson *et al.*, 2010)		
Prunus persica (L.) Batsch.	Ipesika	Leaf decoctions	Diarrhoea in lamb and kid goats (Dold and Cocks, 2001; McGaw *et al.*, 2008)		
Rubiaceae					
Breonadia salicina (Vahl) Hepper & J. R. I. Wood		Bark decoctions	Diarrhoea, bloody stool, colic (Neuwinger, 1996; Venter and Venter, 2002)	Antiescherichial (Sibandze *et al.*, 2010)	
Nauclea latifolia Smith		Root	Dysentry, dyspepsia, fever, gastritis, gonorrhea, malaria,leprosy, measles, piles, toothache (Reid *et al.*, 2006)	Antiamoebic (Tona *et al.*, 1998; Moundipa *et al.*, 2005); antidiarrhoeal (Owolabi *et al.*, 2010)	
Pentanisia prunelloides (Klotzsch exEckl. & Zeyh) Walp	Icishamlilo, Icimamilo (X, Z)	Root, leaves, bulb	Vomiting, diarrhoea in children((Bisi-Johnson *et al.*, 2010)	Antibacterial (Yff *et al.*, 2002)	Palmitic acid (Yff *et al.*, 2002)
Psychotria capensis (Eckl.) Vatke	Ishithitibala (Z), UmGono-gono (X)	Fruits	Diarrhoea and vomiting (Bisi-Johnson *et al.*, 2010)	-	-
Rubia petiolaris DC.		Root	Diarrhoea and dysentery (van Wyk, 2008)	-	-
Rubus pinnatus Willd.	iQunube	Roots	Diarrhoea, haemorrhoids, epilepsy (van Wyk, 2008)	-	-
Rubus rigidus		Root	Diarrhoea and dysentery, toothache,	-	-

			coughs and colds (Iwalewa *et al.*, 2007).		
Vangueria infausta Burch. subsp. infausta	Umviyo		Diarrhoea (de Wet *et al.*, 2010)	Antibacterial and antifungal (de Boer *et al.*, 2005)	-
Rutaceae					
Agathosma betulina (Bergius) Pillans			Antispasmodic, antipyretic, cough, Kidney and urinary tract infection, cholera and stomach ailment (Molla and Viljoen, 2008)	Antidiarrhoea and antibacterial (Lis-Balchin *et al.*, 2001); anti-inflammatory and antioxidant (Steenkamp *et al.*, 2006)	-
Agathosma crenulata (L.) Pillans			Antispasmodic, antipyretic, cough, Kidney and urinary tract infection, cholera and stomach ailment (Molla and Viljoen, 2008)	Antidiarrhoea and antibacterial (Lis-Balchin *et al.*, 2001)	-
Rutaceae					
Clausena anisata (Willd.) Hook.F. Ex Benth.		Bark infusion	Dysentery in cattle (Hutching *et al.*, 1996)	-	-
Ruta graveolens L.	iVendrit (X)	Leaves	Fever, convulsion, epilepsy, diarrhoea, cardiac asthma, jaundice (Dold and Cocks, 2000)	-	-
Sapindaceae					
Hippobromus pauciflorus (L.f.) Radlk.	Ulwathile, iLathile (X)	Bark, root , leaves	Heartwater and diarrhoea in cattle (Dold and Cocks, 2001; McGaw *et al.*, 2008), Diarrhoea and dysentery (Bisi-Johnson *et al.*, 2010)	Acute toxicity (Pendota *et al.*, 2010), anti inflammatory, analgesic antipyretic (Pendota *et al.*, 2009)	-
Scrophulariaceae					
Physalis peruviana L.	Igquzu (X)	Leaves	Stomach disorder (Bisi-Johnson *et al.*, 2010)	-	-
Physalis viscose L.	Umqumqumu (Z)	Leaves	Diarrhoea (Mlambo, 2008)	Antibacterial (Ovenden *et al.*, 2004)	Physaloside A (Ovenden *et al.*, 2004)
Jamesbrittenia atropurpurea (Benth.) Hilliard		Herb	Antispasmodic, stimulant; convulsions; cough; bronchitis (van Wyk, 2008)	-	-
Xanthium strumarium L.		Root	Cancer, dysentery, catarrh, leprosy (Watt and Breyer-Brandwijk, 1996; Fouche *et al.*, 2008)	Anti-inflammatory and analgesic (Han *et al.*, 2007)	1-*O*-caffeoylquinic acid, 3-*O*-caffeoylquinic acid, chlorogenic acid, 4-*O*-caffeoylquinic acid, cynarin, 1,4-*O*-dicaffeoylquinic acid, 1,5-*O*-dicaffeoylquinic acid, 1,5-*O*-dicaffeoylquinic acid, 1,3,5-*O*-tricaffeoylquinic acid, 3,4,5-*O*-tricaffeoylquinic acid (Han *et al.*, 2007)
Solanaceae					
Solanum aculeastrum Dun	umthuma (X, Z)	Fruit, root, leaves	Fruit decoction for haemorrhoids, dysentery, fruit as enema for diarrhoea (Bisi-Johnson *et al.*, 2010)	Antimicrobial (Koduru *et al.*, 2006); Anticancer (Koduru *et al.*, 2007)	tomatidine and solasodine (Koduru *et al.*, 2007)
Solanum incanum L.	uMthuma, *intfuma* (S)	Root	Root infusion for back ache (Amusan, 2007)	-	-

Solanum mauritianum	Umtotovane (Z)	Leaf	Infusion for dysentery and diarrhoea (Watt and Breyer-Brandwijk, 1962)	-	-
Solanum panduriforme E. Mey	Thuthula	Fruit sap	Diarrhoea (Van der Merwe *et al.*, 2001; McGaw *et al.*, 2008)	-	-
Solanum supinum Dun.	Thola (S)	Root	Decoction for diarrhoea (Mathabe *et al.*, 2006)	-	-
Sterculiaceae					
Withania somnifera (L.) Dun	uBuvimba		Fever, cold and flu, abdominal discomfort, diarrhoea, worms sedative and hypnotic (van Wyk and Gericke, 2000; Fouche *et al.*, 2008)	Anti-inflammatory, antitumor, immunomodulatory (Mishra et al., 2000); antichorelae (Acharya *et al.*, 2009)	Isopelletierine, anferine, withanolides, withaferins, sitoindosides (Mishra et al., 2000)
Dombeya rotundifolia (Hochst.) Planch.	Tshiluvhari (V)	Root, bark, wood	Internal ulcers, haemorrhoids, diarrhoea, stomach problems, nausea, chest pain (Verschaeve and Van Staden, 2008)	Mutagenicity , antimutagenicity	-
Hermannia incana Cav	Mavulakuvaliwe	leaves	Crushed with cold water and taken orally for diarrhoea (Appidi *et al.*, 2008)	Toxicological assay (Appidi *et al.*, 2009); antimicrobial, anti-inflammatory, antioxidant and cytotoxicity (Essop et al., 2008)	-
Waltheria indica L.		Whole plant	Decoction for diarrhoea (Mathabe *et al.*, 2006)	Antibacterial, antifungal and antiviral (Maregesi *et al.*, 2008)	-
Strychnaceae					
Strychnos madagascariensis Pior.	Umkwakwa, Mukwakwa (V)		Diarrhoea (de Wet *et al.*, 2010)	-	-
Ulticaceae					
Pouzolzia mixta solms	Muthanzwa	Root, leaves	Dysentery (Verschaeve and Van Staden, 2008); diarrhoea (Samie *et al.*, 2010)	-	-
Verbenaceae					
Clerodendrum glabrum E. Mey	Umqangazani Uqangazana (X), iNunkisiqaqa (X) Umqangazane	leaves	Bloody stool, chest infections (Bisi-Johnson *et al.*, 2010)	-	--
Viscaceae					
Viscum capense L. F.	Iphakama (Z)		Diarrhoea (Forbes, 1986; Van Wyk *et al.*, 2008)	-	-
Vitaceae					
Lippia javanica (Burm.f.) Spreng	Musudzungwane (V)	Leaf infusion	Prophylactics against dysentery, diarrhoea and malaria (Mabogo, 1990; Fouche *et al.*, 2008)	-	-

Rhoicissus tridentata (L.F.) Wild & Drums.	Umthwazi (Z), Murumbula-mbudzana (V)	Tuber decoction	Diarrhoea in goat and sheep (Dold and Cocks, 2001; McGaw *et al.*, 2008)	Antispasmolytic (Katsoulis *et al.*, 2000)	-
Cyphostemma cirrhosum (Thunb.)	Udekane (Z)	Leaves	Diarrhoea (Mlambo, 2008)	-	-
Zingiberaceae					
Aframomum latifolium (Afzel.) K. Schum		Leaves	Decoction for diarhhoea (De Villiers *et al.*, 2010)	-	-
Elytropappus rhinocerotis (L.f) Less.		Twigs	Bitter for dyspepsia, indigestion, diarrhoea (van Wyk, 2008)	-	-
					ent-15*β*-senecioyloxy-16,17-epoxy-kauran-18-oic acid

V=Vhavenda, Z=Zulu, X=Xhosa, S=Swazi

Appendix 9.1: 1D and 2D NMR spectra data of Ursolic acid

Peak number	Hydrogen	13C/DEPT	HSQC	HMBC	LITERATURE
1	1.46-1.6	CH_2	37	15(C25), 27(C2), 56(C5), 78(C3)	39.2
2	1.38-1.5	CH_2	27	37(C1), 56(C5), 78(C3)	28.1
3	3.0	CH	78	16(C23), 27(C2)	78.2
4	-	C	39	-	39.6
5	0.64	CH	56	16(C23), 18 (C6), 37(C1)	55.9
6	1.26, 1.44	CH_2	18	56(C5)	18.8
7	1.24, 1.4	CH_2	33	56(C5)	33.7
8	-	C	39	-	40.1
9	1.42	CH	48	15(C25), 23(C11), 37 (C1), 38.8(C10), 39(C8)	48.1
10	-	C	37	-	37.5
11	1.76-1.88	CH_2	23	39 (C8), 125(C12), 140(C13)	23.7
12	5.2	CH	125	42(C14), 48(C9), 53(C18)	125.7
13	-	C	140	-	139.3
14	-	C	42	-	42.6
15	0.95, 1.4	CH_2	28	24(C16), 48(C17)	28.8
16	1.5, 1.9	CH_2	24	28 (C15), 42(C14), 48(C17), 53(C18), 178(C28)	25
17	-	C	48	-	48.1
18	2.08	CH	53	17.5(29), 24(16), 38.8(19), 42(14), 37(C20), 125(12), 140(13), 178(28)	53.6
19	0.9	CH	38.6	39(C19), 37(C20)	39.5
20	1.29	CH	37		39.4
21	1.48-1.58	CH_2	30		31
22	0.87, 1.48	CH_2	38.9	24(C16), 53(C18)	37.4
23	0.64	CH_3	16	29(C24), 39(C4), 56(C5), 78(C3)	16.5
24	0.87	CH_3	29	16(C23), 78(C3)	28.8
25	0.85	CH_3	15	37(C1), 56(C5)	15.7
26	0.72	CH_3	17.3	33(C7), 39(C8), 42(C14), 48(C9)	17.5
27	1.02	CH_3	23.4	28(C15), 39(C8), 42(C14), 140(C13)	24
28	-	C	178	-	179.7
29	0.78	CH_3	17.5	38.8(C19), 53(C18)	17.5
30	0.90	CH_3	22	31(C21), 48(C20)	21.4

Appendix 9.2: 1D and 2D NMR spectra data of mixture of corosolic acid and maslinic acid

Pea1k number	^{1}H	^{13}C/DEPT	HSQC (Corosolic acid)	HSQC (Maslinic acid)	HMBC (H→C)	LITERATURE
1	1.7-1.8, 0.73-0.79	CH_2	47.75	47.75	16.92(C25), 38.27(C10), 55.35(C5), 68(C2), 83.49(C3)	46.8
2	3.4	CH	68.41	68.41	83.49(C3)	68.9
3	2.7	CH	83.49	83.49	68.41(C2), 29.87(C24)	83.8
4	-	C	39.61	39.61	-	39.1
5	0.68-0.75	CH	55.35	55.35	39.61(C4), 38.25(C10), 29.43(C24)	55.4
6	1.41-1.47, 1.26-1.33	CH_2	18.71	18.71	38.12(C10), 39.61(C4)	18.4
7	1.36-1.45, 1.56-1.61	CH_2	33	33	17.49(C26), 55.35(C5), 18.71(C6)	32.9
8	-	C	39.75	39.75	-	39.6
9	1.5	CH	47.53	47.53	23.74 (11) (24.01)	47.5
10	-	C	38.25	38.25	-	38.3
11	1.8-1.9, 1.43-1.47	CH_2	23.74	24.01	47.53(C9), 125.55(C12) (122.72), 139.43(C13) (145.09)	23.4
12	5.11	CH	125.55	122.72	23.74(C11) (24.01), 42.19(C14) (41.92), 47.53(C9), 53.05(C18) (41)	125.3
13	-	C	139.42	145.09	-	138.1
14	-	C	42.19	41.92	-	42.1
15	0.92-0.99, 1.75-1.79	CH_2	28.21	28.21	39.57(C8), 23.60(C27) (26.8), 42.19(C14) (41.92)	28.0
16	1.26-1.33, 1.47-1.52	CH_2	24.51	27.94	178 (C28) (179.24), 28.21(C15), 53.05(C18), (41), 48.13(C17)	24.3
17	-	C	48.33	48.33	-	48.1
18	2.09 (2.7)	CH	53.05	41	17.75(C29), 24.51(C16) (27.94), 39.10(C19) (27.94), 42.19(C14) (41.92), 48.13(C17), 37(C22),125.55(C12) (122.72), 139.42(C13) (145.09), 178 (C28) (179.24)	52.8
19	0.88-0.92	CH	39.07	27.94 (CH_2)		39.1
20	1.25-1.31	CH	39.02 (CH)	46.13 (C)		38.9
21	1.48-1.58	CH_2	30.6	37	24, 31	30.7
22	1.58, 1.00-1.09	CH	37	47.53	178(C28) (179.24) , 24.51(C16) (27.94)	36.7
23	0.90	CH_3	29.2	29.2	17.76(C24), 55.35(C5), 39.61(C4)	28.7
24	0.68	CH_3	17.76	17.76	29.43(C23), 39.61(C4), 55.35(C5)	17.0
25	0.88	CH_3	16.94	16.94	38.25(C10), 47.53(C9)	17.0
26	0.72	CH_3	17.4	17.4	47.53(C9), 42.19(C14) (41.92), 33.01(C7)	17.0
27	1.00	CH_3	23.60	26.8	28.21(C15), 39.75(C8), 42.19(C14) (41.92), 139.42(C13) (145.09)	23.7
28	-	C	178	179.70	-	177.9
29	0.79	CH_3	17.5	17.5	39.07(C19) (27.94), 53.05(C18) (41)	17.0
30	0.88	CH_3	21.6	21.6	39.02(C20) (46.13)	21.2

Appendix 9.3: 1D and 2D NMR spectra data of mixture of asiatic aicd and arjunolic acid

Peak number	^{1}H	^{13}C/DEPT	HSQC (Asiatic acid)	HSQC (Arjunolic acid)	HMBC (H→C)	LITERATURE
1	0.69, 1.73	CH_2	48.31	48.31	18.04(C25), 68.67(C2), 76.50(C3)	46.8
2	3.45	CH	68.67	68.67	76.50(C3)	68.9
3	3.13	CH	76.50	76.50	68.67(C2), 14.30(C24), 65.01(C23), 43.62(5)	83.8
4	-	C	43.62	43.62	-	39.1
5	1.14	CH	47.27	47.27	76.50(C3), 47.27(C4), 65.01 (C23), 14.30(C24), 33.40 (C7), 18.04 (C25)	55.4
6	1.33, 1.18	CH_2	18.03	18.03	38.12(C10), 39.61(C4)	18.4
7	1.44, 1.20	CH_2	33.40	33.40	40.49 (C8)	32.9
8	-	C	40.49	40.49	-	39.6
9	1.5	CH	47.51	47.54	23.74 (11) (24.01)	47.5
10	-	C	38.40	38.40	-	38.3
11	1.78, 1.42	CH_2	23.00	24.01	125.19(C12) (122.72), 138.92(C13) (145.09)	23.4
12	5.09 (5.12)	CH	125.19	122.28	42.21(C14) (41.92), 47.51(C9) (47.54), 52.62(C18) (41.73)	125.3
13	-	C	138.71	144.68	-	138.1
14	-	C	42.21	41.92	-	42.1
15	1.73, 1.58	CH_2	28.07	28.21	39.57(C8), 23.60(C27) (26.8), 42.19(C14) (41.92)	28.0
16	1.88, 1.48	CH_2	24.31	27.94	179.13 (C28) (179.24),	24.3
17	-	C	47.99	48.33	-	48.1
18	2.05 (2.72)	CH	52.62	41.73	18.16(C29), 24.31(C16) 39.44(C19) (27.94), 42.21 (C14) (42.52), 47.99(C17) (47.01), 125.19(C12) (122.28), 138.92(C13) (144.68), 179.13 (C28) (179.24)	52.8
19	0.88-0.92	CH	39.44	24.31(CH_2)		39.1
20	1.25-1.31	CH	38.90(CH)	47.27 (C)		38.9
21	1.38, 1.20	CH_2	31.42	31	24, 31	30.7
22	1.55. 1.39	CH_2	33	33	24.31(C16), 31.61 (C21)	36.7
23	3.25, 3.00	CH_2	65.01	65.01	14.91(C24), 43.62(C5), 47.27(C4), 76.50 (C3)	28.7
24	0.50	CH_3	14.91	14.91	65.01(C23), 47.27(C4), 43.62(C5)	17.0
25	0.65	CH_3	18.04	18.04	40.49(C10), 43.62(C5), 48.31(C1)	17.0
26	0.68	CH_3	17.04	17.04	47.53(C9), 42.19(C14) (41.92), 33.18 (C7)	17.0
27	0.99 (1.04)	CH_3	23.40	26.8	28.48(C15), 40.49(C8) (39.96), 42.21(C14) (42.57), 138.92(C13) (144.68)	23.7
28	-	C	179.13	179.24	-	177.9
29	0.77 (0.82)	CH_3	18.16	26.0	39.44(C19) (27.94), 53.05(C18) (41)	17.0
30	0.87 (0.82)	CH_3	23.0	33	39.02(C20) (46.13)	21.2

Appendix 9.4: 1D and 2D NMR spectra data of combretastatin B5-2'-O- glucopyranoside

Peak number	^{1}H	^{13}C/DEPT	HSQC[a]	HMBC (H→C)	LITERATURE DATA HSQC[a']
1		C	132.72		132.43
2	6.5	CH	106.26	C1, C3, C6, C1a	105.96
3		C	144.35		144.77
4		C	133.79		133.44
5		C	148.25		147.77
6	6.5	CH	106.26	C1, C5, C2, C1a	105.96
1a	2.7	CH_2	36.96	C1, C2, C1a', C1'	36.58
1a'	2.9, 3.0	CH_2	31.73	C1, C1', C2', C6', C1a	31.35
1'		C	128.55		128.22
2'		C	144.35		143.95
3'		C	139.71		139.29
4'		c	147.26		146.90
5'	6.7	CH	109.40	C1', C3', C4', C6'	109.10
6'	6.6	CH	118.95	C2', C4', C1a'	118.68
1''	4.5	CH_2	106.16	C2', C2'', C5'',	105.79
2''	3.3	CH	74.45	C1'', C3''	74.04
3''	3.2	CH	76.62	C4'', C5''	76.14
4''	3.2	C	70.15	C3'', C5''	69.71
5''	3.2	CH	77.85	C3''	77.44
6'	3.5, 3.7	CH_2	61.34	C4'', C5''	60.89
3-OCH_3	3.5	CH_3	56.34	C3	56.0
4-OCH_3	-	CH_3	-		-
5-OCH_3	3.5	CH_3	56.34	C5	56.0
4'-OCH_3	3.5	CH_3	56.30	C4'	56.0

b Pelizzoni Francesca, 1994: Combretastatin derivatives with antitumoral activity and process for the preparation thereof. Patent Cooperation Treaty (PCT), WO 94/05682, CO7H 15/203, CO7C 43/23, A61K 31/70, 31/085

Appendix 9.5: 1D and 2D NMR spectra data of combretastatin B1-2'-O- glucopyranoside

Peak number	^{1}H	^{13}C/DEPT	HSQC[b]	HMBC (H→C)	LITERATURE DATA HSQC[b']
1		C	138.54		138.10
2	6.5	CH	105.60	C1, C1a, C3, C4	105.63
3		C	152.69		152.65
4		C	135.53		135.45
5		C	152.72		152.65
6	6.5	CH	105.60	C1, C1a, C4, C5	105.63
1a	2.69, 2.79	CH_2	36.92	C1, C1', C2, C6, C1a'	36.91
1a'	2.92, 3.20	CH_2	31.34	C1a, C1', C2', C6'	31.18
1'		C	128.27		128.03
2'		C	143.78		143.93
3'		C	139.13		139.35
4'		c	147.02		146.95
5'	6.7	CH	108.54	C1', C3', C4',	108.99
6'	6.6	CH	119.24	C1a', C2', C4'	118.56
1''	4.5	CH_2	105.69		105.77
2''	3.3	CH	74.21		74.09
3''		CH	76.63		76.26
4''		C	69.72		69.76
5''	3.2	CH	77.03		77.51
6'	3.5, 3.7	CH_2	60.97		60.96
3-OCH_3	3.5	CH_3	55.14	C3	55.78
4-OCH_3	3.5	CH_3	59.69	C4	60.04
5-OCH_3	3.5	CH_3	55.34	C5	55.78
4'-OCH_3	3.5	CH_3	55.42	C4'	55.94

b Pelizzoni Francesca, 1994: Combretastatin derivatives with antitumoral activity and process for the preparation thereof. Patent Cooperation Treaty (PCT), WO 94/05682, CO7H 15/203, CO7C 43/23, A61K 31/70, 31/085

Appendix 9.6: 1D and 2D NMR spectra data of 3β-ethoxy sitosterol

Peak number	^{1}H	^{13}C/DEPT	HSQC	HMBC (H→C)	LITERATURE
1	1.036, 1.817	CH_2	37.47		37.3
2	2.233	CH_2	31.8	36.73 (C10), 72.04 (C3), 121.93 (C6), 140.97 (C5)	31.9
3	3.502	CH	72.04		71.8
4		CH_2	40.00		40.5
5	-	C	140.97		140.7
6	5.33	CH	121.93	32.12 (C7), 36.73 (C10)	121.7
7	1.427	CH_2	32.12		31.9
8		CH	29.91		31.6
9		CH	50.35		50.2
10	-	C	36.73		36.5
11		CH_2	21.30		21.1
12	2.194	CH_2	40		39.8
13	-	C	42.54		42.3
14	1.058	CH	56.99		56.8
15	0.988	CH_2	24.52		24.3
16	1.234	CH_2	28.47		28.3
17	1.058	CH	56.27		56.1
18	0.988	CH_3	12.08	140.97 (C5), 37.47 (C1), 50.35 (C9)	11.9
19	0.659	CH_3	20.03	56.99 (C14), 56.23 (C17), 42.52 (C12), 42.54 (C13),	19.5
20	1.326	CH	36.36		36.2
21	0.904	CH_3	19.24	56.27 (C17), 36.36 (C20), 34.16 (C22)	18.9
22		CH_2	34.16		33.9
23		CH_2	26.29		26.1
24		CH	46.05		45.8
25		CH	29.37		29.1
26	0.988	CH_3	19.61		19.4
27	0.796	CH_3	19.00	29.37 (C25), 46.05 (C24), 19.61 (C26)	19.1
28		CH_2	23.28		23.1
29	0.822	CH_3	12.20	23.25 (C28)	12.0
CH_3CH_2		CH_3			
CH_3CH_2		CH_2	76.86		

Appendix 9.7: 1D and 2D NMR spectra data of Quercetin

Peak number	^{1}H	^{13}C/DEPT	HSQC	HMBC (H→C)	LITERATURE
2		C	147.96	-	146.8
3		C	137.23	-	135.8
4		C	177.31	-	175.9
5		C	162.50	-	160.8
6	6.17	CH	99.28	162.50 (C5), 104.51 (C10), 94.39 (C8)	98.2
7		C	165.55	-	163.9
8	6.37	CH	94.39	165.55 (C7), 158.21 (C9), 104.51 (10), 99.28 (C6)	93.4
9		C	158.21	-	156.2
10		C	104.51	-	1103.0
1'		C	124.13	-	122.0
2'	7.87	CH	116.30	147.94 (C2), 144 (C3'), 121 (C6')	115.1
3'		C	147.96	-	145.1
4'		C	148.75	-	147.7
5'	6.88	CH	116.78	144 (C3'), 121 (C6')	115.6
6'	7.72	CH	121.65		120.6

Appendix 9.8: 1D and 2D NMR spectra data of Myricetin

Peak number	^{1}H	^{13}C/DEPT	HSQC	HMBC (H→C)	LITERATURE

2		C	146.57	-	148.2
3		C	135.92	-	137.5
4		C	175.86	-	177.5
5		C	161.05	-	162.6
6	6.17	CH	97.80	164.17 (C7), 161.05 (C5), 103.06 (C10), 99 (C6)	99.5
7		C	164.17	-	165.8
8	6.37	CH	92.95	164.17 (C7), 158 (C9), 103.06 (C10), 99 (C6)	94.6
9		C	156.76	-	158.4
10		C	103.06	-	104.7
1'		C	121.65	-	123.3
2'	7.38	CH	107.10	145.29 (C3'), 135.51 (C4'), 121.65 (C1'), 107.10 (C6')	108.8
3'		C	145.29	-	146.9
4'		C	135.51	-	137.1
5'		C	145.29	-	146.9
6'	7.38	CH	107.10	145.29 (C5'), 135.51 (C4'), 121.65 (C1'), 107.10 (C2')	108.8

Appendix 9.9: 1D and 2D NMR spectra data of Isoetin 2' methyl ether/ Isoetin 4' methyl ether

Peak number	^{1}H	^{13}C/DEPT		HMBC (H→C)	LITERATURE	
2	-	C	163.09	C3, C6'	163.2[a]	161.70[b]
3	7.2(s)	CH	108.85	C6'	108.7	106.77
4	-	C	184.24		183.5	181.74
5	-	C	163.67		162.7	161.41
6	6.2(d, J=)	CH	99.97		99.8	98.48
7	-	C	166.22		165.3	163.88
8	6.4 (d, J=)	CH	94.86	C6	95.1	93.48
9	-	C	159.43		159	157.19
10	-	C	105.09	C3, C8	105.1	103.46
1'	-	C	110.17	C3'	108.9	106.97
2'	-	C	153.27	OCH_3, C3', C6'	154.2	150.50
3'	6.65 (s)	CH	101.36		105.4	104.20
4'	-	C	153.27	OCH_3, C3', C6'	152.8	151.60
5'	-	C	140.86	C3', C6'	142.8	138.73
6'	7.38 (s)	CH	114.44		112.6	113.44
OCH_3	3.8 (s)		56.34 at C2' or C4'		57.6 at C5'	-

[a]Isoetin 5'methyl ester (AbdurRahman and Moon, 2007), [b] isoetin (Gluchoff-Fiasson *et al*., 1991)

Appendix 9.10: 1D and 2D NMR spectra data of Quercetin-3-O-β-galactopyranoside

Peak number	^{1}H	^{13}C/DEPT	HSQC	HMBC (H→C)	LITERATURE
2	-	C	156.76	-	158.3
3	-	C	133.85	-	135.8
4	-	C	177.83	-	179.4
5	-	C	161.42	-	163.0
6		CH	99.17	162.50 (C5), 104.51 (C10), 94.39 (C8)	99.8
7	-	C	164.58	-	166.0
8		CH	94.09	165.55 (C7), 158.21 (C9), 104.51 (10), 99.28 (C6)	94.7
9	-	C	156.80	-	158.8
10	-	C	102.36	-	104.2
1'	-	C	122.14	-	123.2
2'		CH	115.66	147.94 (C2), 144 (C3'), 121 (C6')	117.8
3'	-	C	144.97	-	145.8
4'	-	C	148.75	-	149.9
5'		CH	116.47		116.1
6'		CH	121.42		122.9
1''	5.18 (d)	CH	104.24	133.85(C2)	105.4
2''	3.83 (t)	CH	71.55	104.12 (C1''), 73.70 (C3'')	73.2
3''	3.56 (m)	CH	73.40	104.12 (C1''), 71.87 (C2''),	75.1
4''	3.87 (s)	CH	68.30	144 (C3'), 121 (C6')	70.0
5''	3.94 (t)	CH	75.96		77.2
6''	3.66 (dd), 3.5 (m)	CH_2	60.45	75.80 (5''), 68.61 (C4'')	61.9

Appendix 9.11: 1D and 2D NMR spectra data of Myricetin-3-O-β-galactopyranoside

Peak number	^{1}H	^{13}C/DEPT	HSQC	HMBC (H→C)	LITERATURE
2		C	156.95	-	156.4
3		C	134.56	-	135.4
4		C	177.97	-	177.6
5		C	161.54	-	161.4
6	6.19	CH	98.47	164.70 (C7), 161.54 (C5), 104.12 (C10), 93.25 (C8)	98.7
7		C	164.70	-	164.4
8	6.38	CH	93.25	164.70 (C7),157.24(C9), 104.12 (C10), 98.47 (C6)	93.4
9		C	157.24	-	156.4
10		C	104.14	-	103.9
1'		C	120.26	-	120.0
2'	7.37	CH	108.52	156.95 (C2), 144.95 (C3'), 136.71 (C4'), 120.26 (C1'), 108.52 (C6')	108.6
3'		C	144.95	-	145.5
4'		C	136.71	-	136.8
5'		C	144.95	-	145.5
6'	7.37	CH	108.52	156.95 (C2), 144.95 (C5'), 136.71 (C4'), 120.26 (C1'), 108.52 (2')	108.6
1''	5.18 (d)	CH	104.12	134.56 (C2)	105.4
2''	3.83 (t)	CH	71.87	104.12 (C1''), 73.70 (C3'')	73.2
3''	3.56 (m)	CH	73.70	104.12 (C1''), 71.87 (C2''),	75.1
4''	3.87 (s)	CH	68.61		70.0
5''	3.94 (t)	CH	75.80		77.2
6''	3.66 (dd), 3.5 (m)	CH_2	60.52	75.80 (5''), 68.61 (C4'')	61.9