

8. REFERENCES

ADAMS, P., 2000. Where's the beef? An update on meat irradiation in the USA. *Radiation Physics and Chemistry* **57**, 231-233.

AHN, D.U., JO, C. & OLSON, D.G., 2000. Analysis of volatile components and the sensory characteristics of irradiated raw pork. *Meat Science* **54**, 209-215.

AL-BACHIR, A. & MEHIO, A., 2001. Irradiated luncheon meat: microbiological, chemical and sensory characteristics during storage. *Food Chemistry* **75**, 169-175.

AMERICAN MEAT SCIENCE ASSOCIATION, 1995. *Research Guidelines for Cookery, Sensory Evaluation and Instrumental Tenderness Measurements of Fresh Meat*. Chicago: National Live Stock and Meat Board. pp 16-28.

BAILEY, A.J., BENDALL, J.R. & RHODES, D.N., 1962. The effect of irradiation on the shrinkage temperature of collagen. *The International Journal of Applied Radiation and Isotopes* **13**, 131-136.

BAILEY, A.J. & RHODES, D.N., 1964. Treatment of meats with ionising radiation. XI – Changes in the texture of meat. *Journal of the Science of Food and Agriculture* **15**, 504-508.

BASSON, R.A., 1983. Advances in radiation chemistry of food and food components – an overview. In: Elias, P.S. & Cohen, J. (Eds.). *Recent Advances in Food Irradiation*. Amsterdam: Elsevier Biomedical Press. pp 1-25.

BEEKMAN, D.D., 1994. *The effects of calcium chloride, sodium chloride and tripolyphosphate injections on the tenderness, water holding capacity and microstructure of beef*. PhD dissertation. Iowa State University. 156 p.

BELITZ, H.D. & GROSCH, W., 1999. *Food Chemistry* (2nd Ed). Berlin: Springer. pp 527-578.

BERGMAN, I. & LOXLEY, R., 1963. Two improved and simplified methods for the spectrophotometric determination of hydroxyproline. *Anal. Chem.* **35**, 1961-1965.

BOUTON, P.E., FORD, A.L., HARRIS, P.V. & RATCLIFF, D. 1975. Objective-subjective assessment of meat tenderness. *J. Texture Studies* **6**, 315-322.

BOUTTEN, B., BRAZIER, M., MORCHE, N., MOREL, A. & VENDEUVRE, J.L. 2000. Effects of animal and muscle characteristics on collagen and consequences for ham production. *Meat Science* **55**, 233-238.

BOWES, J.H. & MOSS, J.A., 1962. The effect of gamma radiation on collagen. *Radiation Research* **16**, 211-223.

BRADY, P.L. & HUNECKE, M.E., 1985. Correlations of sensory and instrumental evaluations of roast beef texture. *Journal of Food Science* **50**, 300-303.

BRYNJOLFSSON, A., 1979. The national food irradiation program conducted by the Department of the Army. *Journal of Food Processing and Preservation* **3**, 125-138.

CAIN, R.F., ANGLEMIER, A.F., SATHER, L.A., BAUTISTA, F.R. & THOMPSON, R.H., 1958. Acceptability of fresh and precooked radiated meats. *Food Research* **23**, 603-609.

CHRISTENSEN, C.M., 1984. Food texture perception. *Advances in Food Research* **29**, 159-199.

CHRYSTALL, B., 1994. Meat texture measurement. In: Pearson, A.M. & Dutson, T.R. (Eds). *Advances in Meat Research*. Volume 9. *Quality Attributes and Their*

Measurement in Meat, Poultry and Fish Products. London: Blackie Academic and Professional. pp. 316-336.

CLAUS, J.R., COLBY, J-W. & FLICK, G.J., 1994. Processed Meats/Poultry/Seafood. *In*: KINSMAN, D.M., KOTULA, A.W. & BREIDENSTEIN B.C. (Eds). *Muscle foods: Meat, Poultry and Seafood Technology*. New York: Chapman & Hall. pp. 106-162.

COHEN, J.S., SHULTS, G.W., MASON, V.C. & WIERBICKI, E., 1977. Variables affecting the acceptability of radappertized ground beef products. Effects of food grade phosphates, NaCl, fat level and grinding method. *Journal of Food Science*, **42**, 338-343.

COVER, S., RITCHEY, S.J. & HOSTETLER, R.L., 1962. Tenderness of beef. 1. The connective tissue component of tenderness. *Journal of Food Science* **27**, 469-475.

CROSS, H.R., DURLAND, P.R. & S.C. SEIDEMAN, 1986. Sensory qualities of meat. *In*: Bechtel, P.J. (Ed.). *Muscle as food*. Orlando: Academic Press. pp 279-315.

CROSS, H.R., CARPENTER, Z.L. & SMITH, G.C., 1973. Effects of intramuscular collagen and elastin on bovine muscles tenderness. *Journal of Food Science* **38**, 998-1003.

CROSS, H.R., MOEN, R. & STANFIELD, M.S., 1978. Training and testing of judges for sensory analysis of meat quality. *Food Technology* **32** (7), 48-54.

DAMODARAN, S., 1996. Amino acids, peptides and proteins. *In*: Fennema, O. (Ed). *Food Chemistry* 3rd edition. New York: Marcel Dekker. pp. 321 – 425.

DAVEY, C.L. & GILBERT, K.V., 1969. Studies in meat tenderness. 7. Changes in the fine structure of meat during ageing. *Journal of Food Science* **34**, 69-74.

DAVIS, G.W., DUTSON, T.R., SMITH, G.C. & CARPENTER, Z.L., 1980. Fragmentation procedure for bovine longissimus muscle as an index of cooked steak tenderness. *Journal of Food Science* **45**, 880-884.

DE BRUYN, I.N., 2000. The application of high dose food irradiation in South Africa. *Radiation Physics and Chemistry* **57**, 223-225.

DE BRUYN, I.N., 2001. Prospects of radiation sterilization of shelf-stable food. *In: Loaharanu, P. & Thomas, P. (Eds). Irradiation for Food Safety and Quality*. Lancaster: Technomic Publishing Company, Inc. pp 206-216.

DE BRUYN, J.F., 1991. *Production and product characteristics of different cattle genotypes under feedlot conditions*. DSc (Agric) Thesis. University of Pretoria. 685 p.

DELINCÉE, H., 1983. Recent advances in radiation chemistry of proteins. *In: Elias P.S. & Cohen, J. (Eds.). Recent Advances in Food Irradiation*. Amsterdam: Elsevier Biomedical Press. pp 129-148.

DESTEFANIS, G., BARGE, M.T., BRUGIAPAGLIA, A. & TASSONE, S., 2000. The use of principal component analysis to characterise beef. *Meat Science* **56**, 255-259.

DIEHL, J.F., 1982. Radiolytic effects in foods. *In: Josephson, E.S., Peterson, M.S. (Eds.). Preservation of Food by Ionising Radiation*. Volume 1. Boca Raton: CRC Press. pp. 279-324.

DRANSFIELD, E., 1994. Tenderness of meat, poultry and fish. *In: Pearson, A.M. & Dutson, T.R. (Eds). Advances in Meat Research*. Volume 9. *Quality Attributes and Their Measurement in Meat, Poultry and Fish Products*. London: Blackie Academic and Professional. pp. 289-315.

DZIEZAK, J.D., 1990. Phosphates improve many foods. *Food Technology* **44** (4), 80-92.

EILERT, S.J., CALHOUN, C.M. & MANDIGO, R.W., 1996. Phosphate type, concentration and preblend duration to improve water holding capacity of beef connective tissue. *Journal of Muscle Foods* **7**, 255-269.

FOEGEDING, E.A., LANIER, T.C. & HULTIN, H.O., 1996. Characteristics of edible muscle tissue. In: Fennema, O. (Ed). *Food Chemistry* 3rd edition. New York: Marcel Dekker. pp. 879 – 942.

FRYLINCK, I., STRYDOM, P.E., SMITH, M & HEINZE, P.H., 2001. *Evaluation of meat tenderness of indigenous South African cattle breeds*. 47th ICoMST, 26-31 August, Kraków, Poland.

GEESINK, G.H., TAYLOR, R.G., BEKHIT, A.E.D. & BICKERSTAFFE, R., 2001. Evidence against the non-enzymatic calcium theory of tenderisation. *Meat Science* **59**, 417-422.

GIROUX, M. & LACROIX, M., 1998. Nutritional adequacy of irradiated meat – a review. *Food Research International* **31**, 257-264.

GULLETT, E.A., ROWE, D.L. & HINES, R.J., 1984. Sensorial assessment of the eating quality of meat. *Can. Inst. Food Sci. Technol. J.* **17** (4), 229-236.

HARRIES, J.M., RHODES, D.N. & CHRYSTALL, B.B., 1972. Meat texture I. Subjective assessment of the texture of cooked beef. *J Texture Studies* **3**, 101-106.

HARRIS, J.J., MILLER, R.K., SAVELL, J.W., CROSS, H.R. & RINGER, L.J., 1992. Evaluation of tenderness of beef top sirloin steaks. *Journal of Food Science* **57**, 6-9.

HEGARTY, P.V.J. & NAUDÉ, R.T., 1970. The accuracy of measurement of individual skeletal muscle fibres separated by a rapid technique. *Laboratory Practise* **19** (2), 161-164.

HEILIGMAN, F., 1965. Storage stability of irradiated meats. *Food Technology* **19** (7), 114-116.

HEINZE, P.H. AND BRUGGEMAN, D., 1994. Ageing of beef: influence of two ageing methods on sensory properties and myofibrillar proteins. *Sciences des Aliments* **14**, 387-399.

HILL, F., 1966. The solubility of intramuscular collagen in meat animals of various ages. *Journal of Food Science* **31**, 161-165.

HONIKEL, K.O. AND HAMM, R., 1994. Measurement of water holding capacity and juiciness. In: Pearson, A.M. & Dutson, T.R. (Eds). *Advances in Meat Research*. Volume 9. *Quality Attributes and Their Measurement in Meat, Poultry and Fish Products*. London: Blackie Academic and Professional. pp. 125-161.

HUNTER, C. 2000. Changing attitudes to irradiation throughout the food chain. *Radiation Physics and Chemistry* **57**, 239-243.

HUTCHINGS, J.B. AND LILLFORD, P.J., 1988. The perception of food texture - the philosophy of the breakdown path. *Journal of Texture Studies* **19**, 103-115.

IAEA, 2003. *Radiation processing for safe, shelf-stable and ready-to-eat food*. IAEA-TECDOC-1337. Austria: IAEA. pp. 1-19.

JOSEPHSON, E.S., 1983. Radappertization of meat, poultry, finfish, shellfish and special diets. In: Josephson, E.S., Peterson, M.S. (Eds.), *Preservation of Food by Ionising Radiation*. Volume 3. Boca Raton: CRC Press. pp. 231-251.

JOSEPHSON, E.S., 1991. Health aspects of food irradiation. *Food and Nutrition Bulletin* **13**(1), 1-4.

KALMAN, B., SZIKRA, L. & FERENCZ, P., 2000. Food irradiation in Hungary: commercial processing and development work. *Radiation Physics and Chemistry* **57**, 281-283.

KIM, Y.H., NAM, K.C. & AHN, D.U., 2002. Volatile profiles, lipid oxidation and sensory characteristics of irradiated meat from different animal species. *Meat Science* **61**, 257-265.

KNIGHT, P. & PARSONS, N., 1988. Action of NaCl and polyphosphates in meat processing: Responses of myofibrils to concentrated salt solutions. *Meat Science* **24**, 275-300.

LEANDER, R.C., HEDRICK, H.B., BROWN, M.F. & WHITE, J.A., 1980. Comparison of structural changes in bovine longissimus and semitendinosus muscles during cooking. *Journal of Food Science* **45**, 1-12.

LEPETIT, J., GRAJALES, A. & FAVIER, R., 2000. Modelling the effect of sarcomere length on collagen thermal shortening in cooked meat: consequence on meat toughness. *Meat Science* **54**, 239-250.

LIU, A., NISHIMURA, T. & TAKAHASHI, K., 1996. Relationship between structural properties of intramuscular connective tissue and toughness of various chicken skeletal muscles. *Meat Science* **43**, 43-49.

MANN, T.F., REAGAN, J.O., LILLARD, D.A., CAMPION, D.R., LYON, C.E. & MILLER, M.F., 1989. Effects of phosphate in combination with nitrite or Maillard reaction products upon warmed-over flavour in precooked, restructured beef chuck roasts. *Journal of Food Science* **54**, 1431 – 1437.

MERRIT, C. & TAUB, I.A., 1983. Commonality and predictability of radiolytic products in irradiated meats. In: Elias, P.S. & Cohen, J. (Eds.). *Recent Advances in Food Irradiation*. Amsterdam: Elsevier Biomedical Press. pp 27-57.

MOLINS, R.A., 1991. *Phosphates in Food*. Florida, USA: CRC Press. pp. 7-38; 121-165.

OFFER, G. & TRINICK, J. 1983. On the mechanism of water holding in meat: The swelling and shrinkage of myofibrils. *Meat Science* **8**, 245-281.

OLSON, D.G. & PARRISH JR, F.C., 1977. Relationship of myofibrillar fragmentation index to measures of beefsteak tenderness. *Journal of Food Science* **42**, 506-509.

PALKA, K., 1999. Changes in intramuscular connective tissue and collagen solubility of bovine m. semitendinosus during retorting. *Meat Science* **53**, 189-194.

POWELL, T.H., HUNT, M.C. & DIKEMAN, M.E., 2000. Enzymatic assay to determine collagen thermal denaturation and solubilization. *Meat Science* **54**, 307-311.

PRATES, J.A.M., COSTA, F.J.S.G., RIBEIRO, A.M.R. & CORREIA, A.A.D., 2002. Contribution of major structural changes in myofibrils to rabbit meat tenderisation during ageing. *Meat Science* **61**, 103-113.

PUOLANNE, E.J., RUUSUNEN, M.H. & VAINIONPää, J.I., 2001. Combined effects of NaCl and raw meat pH on water holding in cooked sausage with and without added phosphate. *Meat Science* **58**, 1-7.

RESSOUANY, M., VACHON, C. & LACROIX, M., 1998. Irradiation dose and calcium effect on the mechanical properties of cross-linked caseinate films. *J. Agric Food Chem.* **46**, 1618-1623.

SAS/STATS®, 1990. User's guide, 4th Edition. Cary, NC, USA: SAS Institute Inc.

SCHEEPERS, M., 1999. *Effect of breed on the quality of beef*. Masters dissertation. University of Pretoria. 130 p.

SEGARS, R.A., CARDELLO, A.V. & COHEN, J.S., 1981. Objective and subjective texture evaluation of irradiation sterilized meat products. *Journal of Food Science* **46**, 999-1003.

SEIDEMAN, S.C., 1986. Methods of expressing collagen characteristics and their relationships to meat tenderness and muscle fibre types. *Journal of Food Science* **51**, 273-276.

SHEARD, P.R., NUTE, G.R., RICHARDSON, R.I., PERRY, A. & TAYLOR, A.A., 1999. Injection of water and polyphosphates into pork to improve juiciness and tenderness after cooking. *Meat Science* **51**, 371-376.

SHULTS, G.W., COHEN, J.S., WIERBICKI, E. & MASON, V.C., (s.a.). *Sensory quality, textural characteristics and hydroxyproline content of irradiated beef steaks*. Natick, Massachusetts: United States Army Natick Laboratories. 20 p.

SHULTS, G.W., RUSSELL, D.R. & WIERBICKI, E., 1972. Effect of condensed phosphates on pH, swelling and water holding capacity of beef. *Journal of Food Science* **37**, 860-864.

SHULTS, W.G. & WIERBICKI, E., 1974. *Effects of condensed phosphates on the pH water holding capacity and meat swelling properties of pork muscle*. TR-74-22FL. Natick, Massachusetts: United States Army Natick Laboratories. 21 p.

SHULTS, W.G., HOWKER, J.J. & WIERBICKI, E., 1975. *Changes in sensory characteristics, texture and organic volatiles of irradiated and nonirradiated pork chops*. TR-75-114-FEL. Natick, Massachusetts: United States Army Natick Laboratories. 18 p.

SHULTS, W.G., HOWKER, J.J. & WIERBICKI, E., 1976. *Effect of salt and sodium tripolyphosphate on texture, organic volatiles and sensory characteristics of irradiated*

and nonirradiated pork rolls. TR-116-FEL. Natick, Massachusetts: United States Army Natick Laboratories. 24 p.

SIMIC, M.G., 1983. Radiation chemistry of water-soluble food components. *In*: Josephson, E.S., Peterson, M.S. (Eds.), *Preservation of Food by Ionising Radiation*. Volume 2. Boca Raton: CRC Press. pp. 1-45.

STATSOFT, 2001. *Statistica for Windows*. Release 6. Computer manual.

TAKAHASHI, K., 1999. Tenderisation of meat during post-mortem ageing: the calcium theory of meat tenderisation. *Animal Science Journal* **70**(1), 1-11.

TARRANT, P.V., 1982. Muscle proteins in meat technology. *In*: Fox, P.F. & Condon, J.J. (Eds.), *Food Proteins*. London: Applied Science Publishers. pp. 261-291.

TAUB, I.A., ROBBINS, F.M., SIMIC, M.G., WALKER, J.E. & WIERBICKI, E., 1979. Effect of irradiation on meat proteins. *Food Technology* **33** (5), 184-193.

TAUB, I.A., 1983. Reaction mechanisms, irradiation parameters and product formation. *In*: Josephson, E.S., Peterson, M.S. (Eds.), *Preservation of Food by Ionising Radiation*. Volume 2. Boca Raton: CRC Press. pp. 125-151.

THAKUR B.R & SINGH, R.K., 1994. Food Irradiation – Chemistry and applications. *Food Reviews International* **10**, 437-473.

TORNBERG, E., 1996. Biophysical aspects of meat tenderness. *Meat Science* **43**, S175-S191.

URBAIN, W.M., 1986. *Food Irradiation*. Florida: Academic Press, Inc. pp. 43-51; 124-145.

WIERBICKI, E., 1980. *Technology of irradiation preserved meats*. 26th European Meeting of Meat Research Workers. Colorado Springs, 194-197.

WIERBICKI, E., 1981. *Technological feasibility of preserving meat, poultry and fish products by using a combination of conventional additives, mild heat treatment and irradiation*. Proceeding of an international symposium on combination processes in food irradiation jointly organised by IAEA and FAO – Combination processes in food irradiation. Vienna: International Atomic Energy Agency. pp. 181-203.

WINGER, R.J. & HAGYARD, C.J., 1994. Juiciness - its importance and some contributing factors. *In: Pearson, A.M. & Dutson, T.R. Quality attributes and their measurement in meat, poultry and fish products. Advances in Meat Research Series Volume 9*. London: Blackie Academic & Professional. pp. 94–124.

WOODS, R.J., 2000. Radiation processing: Current status and future possibilities. *Journal of Radioanalytical and Nuclear Chemistry* **243** 255-260.

ZIMOCH, J. & GULLETT, E.A., 1997. Temporal aspects of perception of juiciness and tenderness of beef. *Food Quality and Preference* **8**, 203-211.