

REFERENCES

Advenier C, Qian Y, Law K, *et al*: Formoterol and salmeterol inhibit bradykinin and histamine induced airway microvascular leakage in guinea-pig. ***Br J Pharmacol*** 1992;105:792-798.

Ahmed MU, Hazeki K, Haseki O, *et al*: Cyclic AMP-increasing agents interfere with chemoattractant-induced respiratory burst in neutrophils as a result of the inhibition of phosphatidylinositol 5-kinase rather than receptor-operated Ca^{2+} -influx. ***J Biol Chem*** 1995;270:23816-23822.

Amitani R, Wilson R, Rutman A, *et al*: Effects of human neutrophil elastase and *Pseudomonas aeruginosa* proteinases on human respiratory epithelium. ***Am J Respir Cell Mol Biol*** 1991;4(1):26-32.

Anderson R, Theron AJ: Physiological potential of ascorbate, β -carotene and α -tocopherol individually and in combination in the prevention of tissue damage, carcinogenesis and immune dysfunction mediated by phagocyte-derived reactive oxidants. ***World Rev Nutr Diet*** 1990;62:27-58.

Anderson R: Phagocyte-derived reactive oxidants as mediators of inflammation-associated tissue damage. ***S Afr J Science*** 1991;87:594-596.

Anderson R, Feldman C, Theron AJ, *et al*: Anti-inflammatory, membrane-stabilizing interactions of salmeterol with human neutrophils *in vitro*. ***Br J Pharmacol*** 1996;117:1378-1394.

Anderson R, Mahomed AG: Calcium efflux and influx in f-met-leu-phe (fmlp)-activated human neutrophils are chronologically distinct events. ***Clin Exp Immunol*** 1997;110:132-138.

Anderson R, Goolam Mahomed A, Theron AJ, *et al*: Effect of rolipram and dibutyryl

cyclic AMP on resequestration of cytosolic calcium in FMLP-activated human neutrophils. **Br J Pharmacol** 1998;124:547-555.

Andersson T, Dahlgren C, Pozzan T, *et al*: Characterization of f-met-leu-phe receptor-mediated Ca^{2+} influx across the plasma membrane of human neutrophils. **Molecular Pharmacol** 1986;30:437-443.

Armstrong AV, Steward-Tull DES: The site of the activity of extracellular products of *Pseudomonas aeruginosa* in the electron transport chain in mammalian cell respiration. **J Med Microbiol** 1971;4:263-270.

Assem ESK, Schild HO: Beta-adrenergic receptors concerned with the anaphylactic mechanism. **Int Arch Allergy Appl Immunol** 1969;45:62-69.

Azghani AO, Johnson AR: Elastase from *P. aeruginosa* alters fibronectin and fibronectin receptors of cultured human lung fibroblasts. **Am Soc Microbiol Ann Meet. abstract** B175.

Azghani AO, Kondepudi AY, *et al*: Interaction of *Pseudomonas aeruginosa* with human lung fibroblasts: Role of bacterial elastase. **Am J Respir Cell Mol Biol** 1992;6:652-657.

Babior BM: The respiratory burst of phagocytes. **J Clin Invest** 1984;73:599-601.

Baggiolini M, Boulay F, Badwey JA, *et al*: Activation of neutrophil leukocytes: chemoattractant receptors and respiratory burst. **Faseb** 1993;7:1004-1010.

Baker AJ, Fuller RW: Anti-inflammatory effect of salmeterol on human alveolar macrophages. **Am Rev Resp Dis** 1990;141:A394.

Baker AJ, Palmer J, Johnson M, *et al*: Inhibitory actions of salmeterol on human airway macrophages and blood monocytes. **Eur J Pharmacol** 1994;264(3):301-306.

Banner KH, Page CP: Anti-inflammatory effects of theophylline and selective phosphodiesterase inhibitors. ***Clin Exp Allergy*** 1996;26(suppl 2):2-9.

Barnes PJ: New concepts in pathogenesis of bronchial hyperresponsiveness and asthma. ***J Allergy Clin Immunol*** 1989;83:1013-1026.

Barnes PJ: Beta-adrenergic receptors and their regulation. ***Am J Respir Crit Care Med*** 1995;152:838-860.

Barnes PJ: New drugs for asthma. ***Clin Exp Allergy*** 1996; 26:738-745.

Barret AJ, Starkey PM: The interaction of α 2-macroglobulin with proteinases. Characteristics and specificity of the reaction, and a hypothesis concerning its molecular mechanism. ***Biochem J*** 1973;133:709-724.

Barrington WW, Jacobson KA, Stiles GL: Glycoprotein nature of the A2-adenosine receptor binding subunit. ***Mol Pharmacol*** 1990;38:177-183.

Beatty K, Robertie P, Senior RM, *et al*: Determination of oxidized alpha-1-proteinase inhibitor in serum. ***J Lab Clin Med*** 1982;100:186-192.

Berends C, Dijkhuizen B, De Monchy JG, *et al*: Inhibition of PAF-induced expression of CD11b and shedding of L-selectin on human neutrophils and eosinophils by the type 4 selective PDE inhibitor, rolipram. ***Eur Resp J*** 1997;10(5):1000-1007.

Berger M, Dearborn D, Legris G, *et al*: Complement receptor expression on neutrophils (PMN) in the lung in cystic fibrosis (CF) (abstract). ***Pediat Res*** 1986;20:305.

Berne RM: Cardiac nucleotides in hypoxia: Possible role in regulation of coronary blood flow. ***Am J Physiol*** 1963;204(2):317-322.

Bernofsky C: Nucleotide chloramines and neutrophil-mediated cytotoxicity. ***Faseb J***

1991;5(3):295-300.

Beutler B, Cerami A: Cachectin: more than a tumor necrosis factor. ***N Engl J Med*** 1987;316:379-385.

Bevilacqua M, Vago T, Baldi G, *et al*: Nimesulide decreases superoxide production by inhibiting phosphodiesterase type IV. ***Eur J Pharmacol*** 1994;268:415-423.

Birrer P, McAlvaney NG, Rudeberg C, *et al*: Protease-antiprotease imbalance in the lungs of children with cystic fibrosis. ***Am J Respir Crit Care Med*** 1994;150:207-213.

Blackwood LL, Stone RM, Iglewski BH, *et al*: Evaluation of *Pseudomonas aeruginosa* exotoxin A and elastase as virulence factors in acute lung infection. ***Infect Immunol*** 1983;39:198-201.

Bokoch GM: Chemoattractant signalling and leukocyte activation. ***Blood*** 1995;86(5):1649-1660.

Bone RC: The pathogenesis of sepsis. ***Ann Intern Med*** 1991;115:457-469.

Bouma MG, Jeunhomme TMMA, Boyle DL, *et al*: Adenosine inhibits neutrophil degranulation in activated human whole blood. ***The J Immunol*** 1997;158:5400-5408.

Brace LD, Venton DL, LE Breton GC: Reversal of thromboxane A₂/prostaglandin H₂ and ADP-induced calcium release in intact platelets. ***Am J Physiol*** 1985;249:H8-H13.

Bruns RF, Lu GH, Pugsley GH: Characterization of the A₂ adenosine receptor labelled [³H]-NECA in rat striatal membranes. ***Mol Pharmacol*** 1986;29:331-346.

Bullough DA, Magill MJ, Firestein GS, *et al*: Adenosine activates A₂ receptors to inhibit neutrophil adhesion and injury to isolated cardiac myocytes. ***J Immunol*** 1995;155(5):2579-2586.

Buret A, Cripps AW: The immunoevasive activities of *Pseudomonas aeruginosa*. Relevance for cystic fibrosis. ***Am J Respir Dis*** 1993;148:793-805.

Butchers PR, Vardey CJ, Johnson M: Salmeterol: a potent and long-acting inhibitor of inflammatory mediator release from human lung. ***Br J Pharmacol*** 1991;104:672-676.

Cantin AM, North SL, Hubbard RC, *et al*: Normal alveolar epithelial lining fluid contains high levels of glutathione. ***J Appl Physiol*** 1987;63:152-157.

Cantin AM, Woods DE: Protection by antibiotics against myeloperoxidase-dependent cytotoxicity to lung epithelial cells *in vitro*. ***J Clin Invest*** 1993;91:38-45.

Carr AC, Winterbourne CC: Oxidation of neutrophil glutathione and protein thiols by myeloperoxidase-derived hypochlorous acid. ***Biochem J*** 1997;327(Pt 1):275-281.

Chong LK, Cooper E, Vardey CJ, *et al*: Salmeterol inhibition of mediator release from human lung mast cells by β -adrenoreceptor-dependent and independent mechanisms. ***Br J Pharmacol*** 1998;123:1009-1015.

Church MK, Holgate ST, Hughes PJ: Adenosine inhibits and potentiates IgE-dependent histamine release from human basophils by an A_2 -receptor mediated mechanism. ***Br J Pharmacol*** 1983;80:719-726.

Cochrane CG, Spragg R, Revak SD: Pathogenesis of the adult respiratory distress syndrome. Evidence of oxidant activity in bronchoalveolar lavage fluid. ***J Clin Invest*** 1983;71:754-761.

Cole PJ, Wilson R: Host-microbial inter-relationships in respiratory infection. ***Chest*** 1989;95:217-221.

Collis MG, Hourani SMO: Adenosine receptor subtypes. ***Trends Pharmacol Sci*** 1993;14:360.

Colman RW: The role of plasma proteases in septic shock. *New Engl J Med* 1989;320:1207-1209.

Concalves de Moraes VL, Singer M, Vargaftig BB, *et al*: Effects of rolipram on cyclic AMP levels in alveolar macrophages and lipopolysaccharide-induced inflammation in mouse lung. *Br J Pharmacol* 1998;123:631-636.

Condino-Neto A, Vilela MM, Cambiucci EC *et al*: Theophylline therapy inhibits neutrophil and mononuclear cell chemotaxis from chronic asthmatic children. *Br J Clin Pharmacol* 1991;32:557-561.

Coskey LA, Bitting J, Roth MD: Inhibition of natural killer cells by therapeutic levels of theophylline. *Am J Respir Cell Mol Biol* 1993;9:659-665.

Cox CD: Role of pyocyanine in the acquisition of iron from transferrin. *Infect Immun* 1986;52:263-270.

Cox G: Glucocorticoid treatment inhibits apoptosis in human neutrophils. Separation of survival and activation outcomes. *J Immunol* 1995;154(9):4719-4725.

Cronstein BN, Rosenstein ED, Kramer SB, *et al*: Adenosine, A physiologic modulator of superoxide anion generation by human neutrophils. Adenosine acts via an A2-receptor on human neutrophils. *J Immunol* 1985;135:1366-1371.

Cronstein BN, Kramer SB, Rosenstein ED, *et al*: Occupancy of adenosine receptors raises cyclic AMP alone and in synergy with occupancy of chemoattractant receptors and inhibits membrane depolarization. *Biochem J* 1988;252:709-715.

Cronstein BN: Adenosine, an endogenous anti-inflammatory agent. *J Appl Physiol* 1994;78:5-13.

Cruickshank CND, Lowbury E JL: The effect of pyocyanine on human skin cells and

leukocytes. *Br J Exp Pathol* 1953;34:583-587.

Dallegri F, Goretti R, Ballestrero A, *et al*: Neutrophil-induced depletion of adenosine triphosphate in target cells: Evidence for a hypochlorous acid-mediated process. *J Lab Clin Med* 1988;112:765-772.

Dalziel HH, Wetfall DP: Receptors for adenine nucleotides and nucleosides: subclassification, distribution, and molecular characterization. *Pharm Reviews* 1994;46:449-466.

Davis PB: Cystic Fibrosis from the bench to the bedside. *New Engl J Med* 1991;325:575-576.

Davis WB, Pacht ER: Extracellular antioxidant defences in the lung. Crystal RG, West JB eds. New York: Raven Press 1991:1821-1827.

De Boer JP, Creasy AA, Chang A, *et al*: Alpha-2-macroglobulin functions as an inhibitor of fibrinolytic, clotting, and neutrophilic proteinases in sepsis: Studies using a baboon model. *Infect Immun* 1993;61(12):5035-5043.

Dent G, Giembycz MA, Rabe KF, *et al*: Inhibition of guinea-pig eosinophil cyclic nucleotide PDE activity and opsonized zymosan-stimulated respiratory burst by type 4-selective PDE inhibitors. *Br J Pharmacol* 1991;103:1339-1346.

Denis M, Goujian L, Widmer M, *et al*: A mouse model of lung injury induced by microbial products: implications of tumor necrosis factor. *Am J Respir Cell Mol Biol* 1994;10:658-664.

Denning GM, Railsback MA, Rasmussen GT, *et al*: *Pseudomonas* pyocyanine alters calcium signaling in human airway epithelial cells. *Am J Physiol* 1998;274(6):L893-900.

De Togni P, Cabrini G, Di Virgilio F: Cyclic AMP inhibition of f-met-leu-phe-dependent metabolic responses in human neutrophils is not due to its effects on cytosolic Ca^{2+} . ***Clin Exp Immunol*** 1984;224:629-635.

Devalia JL, Sapsford RJ, Rsznak C, *et al*: The effects of salmeterol and salbutamol on ciliary beat frequency of cultured human bronchial epithelial cells *in vitro*. ***Pulmonary Pharmacol*** 1992;5:257-263.

Di Benedetto G, Manara-Shediac FS, Mehta A: Effect of cAMP on ciliary activity of human respiratory epithelium. ***Eur Respir J*** 1991;4:789-795.

Di Virgilio F, Vicenti LM, Treves S, *et al*: Inositol phosphate formation in fmet-leu-phe-stimulated human neutrophils does not require an increase in cytosolic free Ca^{2+} concentration. ***Biochem J*** 1985;229:361-367.

Donaldson J, Brown AM, Hill SJ, *et al*: Influence of rolipram on the cyclic 3'-5'-adenosine monophosphate response to histamine and adenosine in slices of guinea-pig cerebral cortex. ***Biochem Pharmacol*** 1988;37:715-723.

Doring GHJ, Obernesser K, Botzenhart K: Extracellular toxins of *Pseudomonas aeruginosa*. ***Zentralb Bakteriол Parasitenkd Infektionskr Hyg Abt 1 Orig Reihe A*** 1981;249:89-98.

Doring G, Dauner HM: Clearance of *P. aeruginosa* in different rat lung models. ***Am Rev Respir Dis*** 1988;138:1249-1253.

Dreher D, Junod AF: Differential effects of superoxide, hydrogen peroxide, and hydroxyl radical on intracellular calcium in human endothelial cells. ***J Cell Physiol*** 1995;162:147-153.

Dusi S, Donini M, Rossi F: Mechanisms of NADPH-oxidase activation in human neutrophils: p67^{phox} is required for the translocation of rac1 but not for rac2 from the

cytosol to the membranes. **Biochem J** 1995;308:991-994.

Duswald KH, Jochum M, Schramm W, *et al*: Released granulocytic elastase: an indication of pathobiochemical alterations in septicemia after abdominal surgery. **Surgery** 1985;98:892-898.

Elsner J, Kaefer V, Emmendorffer A, *et al*: Heterogeneity in the mobilization of cytoplasmic Ca^{2+} by human polymorphonuclear leukocytes in response to FMLP, C5a and IL8/NAP-1. **J Leukoc Biol** 1992;51:77-83.

Endres S, Fulle H, Sinha B, *et al*: Cyclic nucleotides differentially regulate the synthesis of tumor necrosis factor- α and interleukin-1 β by human mononuclear cells. **Immunology** 1991;72:56-60.

Engelhardt JF, Zepeda M, Cohn JA, *et al*: Expression of the Cystic Fibrosis gene in adult human lung. **J Clin Invest** 1994;93:737-749.

Erjefalt I, Persson CGA: Long duration and high potency of antiexudative effects of formoterol in guinea-pig tracheobronchial airways. **Am Rev Respir Dis** 1991;144:788-791.

Ezeamuzie CI, Al-Hage M, Nwankwoala RNP: The effect of salmeterol on human eosinophils is both stimulus- and response-dependent. **Int J Immunopharmacol** 1997;19(8):421-430.

Fahy JV, Kim KW, Liu J, *et al*: Prominent neutrophilic inflammation in sputum from subjects with asthma exacerbations. **J Allergy Clin Immunol** 1995;95(4):843-852.

Fantone JC, Ward PA: Role of oxygen-derived free radicals and metabolites in leukocyte-dependent inflammatory reactions. **AJP** 1982;107:397-417.

Fantozzi R: Autocoid and B-adrenergic agonist modulation of N-formylmethionyl-leucyl-

phenylalanine evoked lysosomal enzyme release from human neutrophils. **Agents Actions** 1984;14:441-450.

Fantozzi R, Brunelleschi S, Cremonesi P, *et al*: Drug modulation of superoxide anion production from human neutrophils. **Int J Tiss Reac** 1985;7:149-152.

Favre CJ, Nüsse O, Lew PD, *et al*: Store-operated Ca²⁺ influx: What is the message from the stores to the membrane? **J Lab Clin Med** 1996;128:19-26.

Feokistov I, Biaggioni I: Adenosine A2b receptors evoke interleukin-8 secretion in human mast cells. **J Clin Invest** 1995;96(4):1979-1986.

Fick RB Jr: Pathogenesis of the Pseudomonas lung lesion in Cystic Fibrosis. **Chest** 1989;96(1):158-164.

Flood ME, Herbert RB, Holliman R: Pigments of *Pseudomonas* species. Biosynthesis of pyocyanine and the pigments of *P. aereofaciens*. **J Chem Soc (Perkin)** 1972;4:622-626.

Fredholm BB, Abbracchio MP, Burnstock G, *et al*: Nomenclature and classification of purinoceptors. **Pharmacol Rev** 1994;46(2):143-156.

Fredholm BB, *et al*: Adenosine A1 receptors mediate the inhibitory effect of adenosine on formyl-met-leu-phe stimulated neutrophil burst in neutrophil leucocytes. **Nauyn-Schmiedbergs Archs Pharmacol** 1996;354:262-267.

Fredholm BB: Purines and neutrophil leukocytes. **Gen Pharmacol** 1997;28:345-350.

Freissmuth M, Schutz W, Linder ME: Interactions of bovine brain A1-adenosine receptor with recombinant G-protein alpha-subunits. Selectivity for rGi alpha-3. **J Biol Chem** 1991;266:17778-17783.

Fugner A: Formation of oedema and accumulation of eosinophils in the guinea-pig lung. Inhibition by beta-stimulants. *Int Arch Allergy Appl Immunol* 1989;88:225-227.

Gallin JF, Rosenthal AS: The regulatory role of divalent cations in human granulocyte chemotaxis. *J Cell Biol* 1974;62:594-609.

Gallo-rodriguez C, Ji XD, Melman N, *et al*: Structure-activity relationships of N⁶-benzyladenosine-S-uronamides as A₃-selective adenosine agonists. *J Med Chem* 1994;37:636-642.

Geiszt M, Kapus A, Nemet K, *et al*: Regulation of capacitative Ca²⁺ influx in human neutrophil granulocytes. *J Biol Chem* 1997;272:26471-26478.

Gerard C, Gerard NP: C5a and its receptor. *Ann Rev Immunol* 1994;12:775-888.

Gessard C: New research about pyocyanine pigment. *Ann Inst Pasteur* 1890;4:88-102.

Giembycz MA: Phosphodiesterase 4 and tolerance of B₂-adrenoreceptor agonists in asthma. *TIPS* 1996;17:331-336.

Giembycz MA, Dent G: Prospects for selective cyclic nucleotide phosphodiesterase inhibitors in the treatment of bronchial asthma. *Clin Exp Allergy* 1992;22:337-344.

Gonias SL, Pizzo SV: Conformation and protease binding activity of binary and ternary human α_2 -macroglobulin-protease complexes. *J Biol Chem* 1983;258:14682-14685.

Goodman RR, Snyder SH: Autoradiographic localization of adenosine receptors in rat brain using (3H)-cyclohexyladenosine. *J Neurosci* 1982;2:1230-1241.

Green MR, Weaver LT, Heely AF, *et al*: Cystic Fibrosis identified by neonatal screening: incidence, genotype and early natural history. *Arch Dis Child* 1993;68:464-

467.

Gregory GA, Woolf DA, McMahon R, *et al*: Cystic Fibrosis diagnosed by molecular genetic investigation in the mother of a patient with Cystic Fibrosis. ***Thorax*** 1997;52:96-97.

Griswold DE, Webb EF, Breton J, *et al*: Effect of selective phosphodiesterase type 4 inhibitor, Rolipram, on fluid and cellular phases of inflammatory response. ***Inflammation*** 1993;17(3):333-346.

Grynkiewicz G, Poenie M, Tsien RY: A new generation of Ca²⁺ indicators with greatly improved fluorescence properties. ***J Biol Chem*** 1985;272:26471-26478.

Guillot C, Fornaris M, Badger M, *et al*: Spontaneous and provoked resistance to isoproterenol in isolated human bronchus. ***Br J Pharmacol*** 1993;109:693-698.

Gurden MF, Coates J, Ellis F, *et al*: Functional characterization of three adenosine receptor types. ***Br J Pharmacol*** 1993;109:693-698.

Guyton AC: Chapter 74: ***Medical Physiology, 8th ed.*** (Wonsiewicz MJ, Hallowell R, eds), 1991;chapter 74, p 815. USA.

Halpern YS, Tenen M, Grossowicz N: Further evidence for the production of pyocyanine by nonproliferating suspensions of *Pseudomonas aeruginosa*. ***J Bacteriol*** 1962;83:935-936.

Hancock JT: Superoxide, hydrogen peroxide and nitric oxide as signalling molecules: their production and role in disease. ***Br J Biomed Sci*** 1997;54:38-46.

Hannon JP, Bray-French KM, Phillips RM, *et al*: Further pharmacological characterization of the adenosine receptor subtype mediating inhibition of oxidative burst in human isolated neutrophils. ***Drug Dev Res*** 1998;43:214-224.

Harms HH, Wardeh G, Mulder AH: Effects of adenosine on polarisation-induced release of various radiolabelled neurotransmitters from slices of rat corpus striatum. **Neuropharmacology** 1979;18:577-580.

Harpel PC: Studies on human plasma α_2 -macroglobulin-enzyme interactions. **J Exp Med** 1973;138:508-521.

Harris AL, Connell MJ, Ferguson EW, *et al*: Role of low Km cyclic AMP phosphodiesterase inhibition in tracheal relaxation and bronchodilation in guinea-pig. **J Pharmacol Exp Ther** 1989;251:199-206.

Hill ID, MacDonald WBG, Bowie MD, *et al*: Cystic Fibrosis in Cape Town. **S Afr Med J** 1988;73:147-149.

Hirschhorn R: Adenosine deaminase deficiency: Molecular basis and recent developments. **Clin Immunol Immunopathol** 1995;76(3 Pt 2):S219-S227.

Hoffman HM, Walker LL, Marquardt DL: Mast cell adenosine induced calcium mobilization via G_{i3} and G_q proteins. **Inflammation** 1997;21(1):55-71.

Holmsen HE, Storm E, Day HJ: Determination of ATP and ADP in blood platelets: A modification of the firefly luciferase assay for plasma. **Anal Biochem** 1972;146:481-502.

Huang S, Apasov S, Koshiba M, *et al*: Role of A2a extracellular adenosine receptor-mediated signalling in adenosine-mediated inhibition of T-cell activation and expansion. **Blood** 1997;91(4):1600-1610.

Hubbard R, Crystal RG: Antiproteases In: The Lung, Scientific Foundations, Raven Press, New York, 1991;2:1775-1787.

Hughes PJ, Holgate ST, Church MK: Adenosine inhibits and potentiates IgE-dependent

histamine release from human lung mast cells by an A₂-purinoceptor mediated mechanism. *Biochem Pharmacol* 1984;33:3847-3852.

Hutchison AJ, Williams M, De Jesus R, *et al*: 2-(Arylalkylamino)adenosine-5'-uronamides: a new class of highly selective adenosine A₂ receptor ligands. *J Med Chem* 1990;33:1919-1924.

Iannone MA, Wolberg G, Zimmerman TP: Chemotactic peptide induces cAMP elevation in human neutrophils by amplification of the adenylate cyclase response to endogenously produced adenosine. *J Biol Chem* 1989;264:20177-20180.

Ingledeew WM, Campbell JJ: Evaluation of shikimic acid as a precursor of pyocyanine. *Can J Microb* 1969;15:535-541.

Ingram JM, Blackwood AC: Microbial production of phenazines. *Adv Appl Microbiol* 1970;13:267-282.

Jacobson KA, Nikodijevic O, Shi D, *et al*: A role for central A₃-adenosine receptors: mediators of behavioural depressant effects. *Febs Lett* 1993;336:57.

Jackson JH, Cochrane CG: Leukocyte-induced tissue injury. *Hematol Oncol Clin North Am* 1988;2:317-334.

Jacquot J, Tournier JM, Puchelle E: In Vitro evidence that human airway lysozyme is cleaved and inactivated by *Pseudomonas aeruginosa* elastase and not by human leukocyte elastase. *Infect Immun* 1985;47:555-560.

Janoff A, Carp H, Laurent P, *et al*: The role of oxidative processes in emphysema. *Am Rev Respir Dis* 1993;(2 suppl): S31-S38.

Jarvis MF, Schulz R, Hutchinson AJ, *et al*: [³H]-CGS21680C, a selective A₂ adenosine receptor agonist directly labels A₂ receptors in rat brain. *J Pharmacol Exp Ther*

1989;251:888-893.

Jarvis MF, Williams M: Direct autoradiographic localization of adenosine A2 receptors in the rat brain using the A2 selective agonist 3H-CGS 21680. *Eur J Pharmacol* 1989;168:243-246.

Johannsson JS, Nied LE, Haynes DH: Cyclic AMP stimulates Ca²⁺-ATPase mediated Ca²⁺ extrusion from human platelets. *Biochem Biophys* 1992;1105:19-28.

Johnson M, Butchers PR, Coleman RA, *et al*: The pharmacology of salmeterol. *Life Sci* 1993;52:2131-2143.

Jordan EO: Bacillus pyocyaneus and its pigments. *J Exp Med* 1899;4:627-647.

Kalter ES, Daha MR, Ten Cate JW, *et al*: Activation and inhibition of Hageman factor-dependent pathways and the complement system in uncomplicated bacteremia or bacterial shock. *J Infect Dis* 1985;151:1019-1027.

Kanthakumar K, Cundell DR, Johnson M, *et al*: Effect of salmeterol on human nasal epithelial cell ciliary beating: inhibition of the ciliotoxin, pyocyanin. *Br J Pharmacol* 1993;112:493-498.

Kellems RE, Yeung C-Y, Ingolia DE: Adenosine deaminase deficiency and severe combined immunodeficiencies. *Trends Genet* 1985;1:278-285.

Kerem BS, Rommens JM, Buchanan JA, *et al*: Identification of the Cystic Fibrosis gene: Genetic analysis. *Science* 1989;245:1073-1080.

Khalfi F, Gressier B, Brunet C, *et al*: Involvement of the extracellular calcium in the release of elastase and the human neutrophil oxidative burst. *Cell Molec Biol* 1996;42(8):1211-1218.

Knight M, Hartman PE, Hartman Z, *et al*: A new method of preparation of pyocyanine and demonstration of an unusual bacterial sensitivity. ***Anal Biochem*** 1979;95:19-23.

Knight DE, Hallam TJ, Scrutton MJ: Agonist selectivity and second messenger concentration in Ca²⁺-mediated secretion. ***Nature*** 1982;296:256-257.

Koch C, Hoiby N: pathogenesis of Cystic Fibrosis. ***The Lancet*** 1993;341:1065-1069.

Kohno Y, Ji X, Mawhorter SD: Activation of A3 adenosine receptors on human eosinophils elevates intracellular calcium. ***Blood*** 1996;88(9):3569-3574.

Koppenol WH: The basic chemistry of nitrogen and peroxyxynitrite. ***Free Rad Biol and Medicine*** 1998;25(4/5):385-391.

Korchak HM, Vienne K, Rutherford LE, *et al*: Stimulus response coupling in the human neutrophil. Temporal analysis of changes in cytosolic calcium and calcium efflux. ***J Biol Chem*** 1984;259:4076-4082.

Krause KH, Pittet D, Volpe P, *et al*: Calciosome, a sarcoplasmic reticulum-like organelle involved in intracellular Ca²⁺-handling by non-muscle cells: studies in human neutrophils and HL60 cells. ***Cell Calcium*** 1989;10:351-361.

Kunkel SL, Remick G, Strieter RM, *et al*: Mechanisms that regulate the production and effects of tumor necrosis factor- α . ***Crit Rev Immunol*** 1989;9:93-117.

Kurdowska A, Carr FK, Stevens MD, *et al*: Studies on the interaction of IL-8 complexed with α_2 -macroglobulin in lung fluids of patients with adult respiratory distress syndrome. ***The J Immunol*** 1997;158:1930-1940.

Ladd PM, Golding BJ, Smiley PA, *et al*: Receptor specific threshold effects of cAMP are involved in the regulation enzyme release and superoxide production from human neutrophils. ***Biochem Biophys Acta*** 1985;846:286.

Lagast H, Lew DP, Waldvogel FA: Adenosine triphosphate-dependent calcium pump in the plasma membrane of guinea pig and human neutrophils. *J Clin Invest* 1984;73:107-115.

Lamblin C, Gosset P, Tillie-Leblond I, *et al*: Bronchial neutrophilia in patients with non-infectious status asthmaticus. *Am J Resp Crit Care Med* 1997;157(2):394-402.

Lee CT, Fein AM, Lippmann M, *et al*: Elastolytic activity in pulmonary lavage fluid from patients with adult respiratory distress syndrome. *N Engl J Med* 1981;304:192-196.

Lew PD, Monad A, Waldvogel FA, *et al*: Quantitative analysis of the cytosolic free calcium dependency of exocytosis from three subcellular compartments in intact human neutrophils. *J Cell Biol* 1986;102:2197-2294.

Libby P, Ordovas JM, Auger KR, *et al*: Endotoxin and tumor necrosis factor induce interleukin-1 gene expression in adult human vascular endothelial cells. *Am J Pathol* 1986;124:179-186.

Lin H-C, Cheng H-F, Wang C-H, *et al*: Inhaled Gentamicin reduces airway neutrophil activity and mucus secretion in bronchiectasis. *Am J Respir Crit Care Med* 1997;155:2024-2029.

Livi GP, Kmetz P, McHale MM, *et al*: Cloning and expression of cDNA for a human low- K_m , rolipram-sensitive cyclic AMP phosphodiesterase. *Mol Cell Biol* 1990;10:2678-2786.

Louis RE, Radermecker MF: Substance P induced histamine release from human basophils, skin and lung fragments: effect of nedocromil sodium and theophylline. *Int Arch Allergy Appl Immunol* 1990;92:329-333.

MacDonald JC: In "**Antibiotics**" (Gottlieb D & Shaw PD, eds), Vol. II, 1967, p. 52. Springer-Verlag, Berlin.

Maeda H, Molla A, Oda T, *et al*: Internalization of serratal protease into cells as an enzyme-inhibitor complex with α_2 -macroglobulin and regeneration of protease activity and cytotoxicity. **J Biol Chem** 1987;262:10946-10950.

Marivet MC, Bourguignon JJ, Lugnier C, *et al*: Inhibition of cyclic adenosine 3'-5'-monophosphate phosphodiesterase from vascular smooth muscle by rolipram analogues. **J Med Chem** 1989;32:1450-1457.

Marks JD, Marks CB, Luce JM, *et al*: Plasma Tumor necrosis factor in patients with septic shock. **Am Respir Dis** 1990;141:94-97.

Marone G, Thomas LL, Lichtenstein LM: The role of agonists that activate adenylate cyclase in the control of cAMP metabolism and enzyme release by human polymorphonuclear leukocytes. **J Immunol** 1980;125:2277-2283.

Masclans JR, Barbera JA, MacNee W, *et al*: Salbutamol reduces pulmonary neutrophil sequestration of platelet-activating factor in humans. **Am J Respir Crit Care Med** 1996;154(2):529-532.

Masumoto N, Tasaka K, Miyake A, *et al*: Superoxide anion increases intracellular free calcium in myometrial cells. **J Biol Chem** 1990;265:22533-22536.

McAndrew J, Patel RP, Jo H, *et al*: The interplay of nitric oxide and peroxynitrite with signal transduction pathways: implications for disease. **Semin Perinatol** 1997;21(5):351-366.

McElvaney NG, Hubbard RC, Birrer P, *et al*: Aerosol α 1-antitrypsin treatment for Cystic Fibrosis. **Lancet** 1991;337:392-394.

McGarrity ST, Stephenson AH, Webster RO: Regulation of human neutrophil functions of adenine nucleotides. *J Immunol* 1989;142:1986-1994.

Miller KM, Dearborn DG, Sorensen RU: *In vitro* effect of synthetic pyocyanine on neutrophil superoxide production. *Infect Immun* 1987;55(3):559-563.

Millican RC: Biosynthesis of pyocyanine. Incorporation of [¹⁴C]shikimic acid. *Biochem Biophys Acta* 1962;57:407-409.

Miotla JM, Teixeira MM, Hellewell PG: Suppression of acute lung injury in mice by an inhibitor of phosphodiesterase type 4. *Am J Respir Cell Mol Biol* 1998;18:411-420.

Mitsuyama T, Tanaka T, Hidaka K, *et al*: Inhibition by erythromycin of superoxide anion production by human polymorphonuclear leukocytes through the action of cyclic AMP-dependent protein kinase. *Respiration* 1995;62(5):269-273.

Moncada S, Higgs A: The L-arginine-nitric oxide pathway. *The New Engl J Med* 1993;329(27):2002-2012.

Montero M, Alvarez J, Garcia-Sanchez J, *et al*: Agonist-induced Ca²⁺ influx in human neutrophils is secondary to the emptying of intracellular calcium stores. *Biochem J* 1991;277:73-79.

Moore AR, Willoughby DA: The role of cAMP regulation in controlling inflammation. *Clin Exp Immunol* 1995;101:387-389.

Morihara K, Tsuzuki H, Oda K: Protease and elastase of *Pseudomonas aeruginosa*: inactivation of human plasma alpha-1-proteinase inhibitor. *Infect Immun* 1979;24:188-193.

Muhradt PF, Tsai H, Conradt P: Effect of pyocyanine, a blue pigment of *Pseudomonas aeruginosa* on separate steps of T cell activation: IL-2 production, IL-2 receptor

formation, proliferation and induction of cytolytic activity. *Eur J Immunol* 1986;16:434-440.

Munro NC, Barker A, Rutman A, *et al*: The effect of pyocyanine and 1-Hydroxyphenazine on *in vivo* tracheal mucus velocity. *J Appl Physiol* 1989;76:316-323.

Munshi R, Pang IH, Sternweis PC, *et al*: A1 adenosine receptors of bovine brain couple to guanine nucleotide-binding proteins G_{i1} , G_{i2} and G_{i0} . *J Biol Chem* 1991;266:22285-22289.

Naccache PH, Showell HJ, Becker EL, *et al*: Transport of sodium, potassium and calcium across rabbit polymorphonuclear leukocyte membranes. *J Cell Biol* 1977;73:428-444.

Nakashima S, Mizutani T, Nakamura Y, *et al*: Effects of selective phosphodiesterase type 4 inhibitor, rolipram, on signal transducing phospholipases in neutrophil: inhibition of phospholipases A2 and D. *Comparative Biochem Biophys. Part C, Pharmacol Toxicol Endocrinol* 1995;112(2):137-143.

Nasmith PE, Griinstein S: Phorbol ester-induced changes in cytoplasmic calcium in human neutrophils. *J Biol Chem* 1987;262:13558-13566.

Nathan CF: Secretory products of macrophages. *J Clin Invest* 1987;79:319-326.

Nathan CF: Neutrophil activation on biological surfaces. Massive secretion of hydrogen peroxide in response to products of macrophages and lymphocytes. *J Clin Invest* 1987;80:1550-1560.

Nathan C: Nitric oxide as a secretory product of mammalian cells. *Faseb J* 1992;6(12):3051-3064.

Nials AT, Coleman AR, Johnson M, *et al*: Effects of adrenoreceptor agonists in human bronchial smooth muscle. *Br J Pharmacol* 1993;110:1112-1116.

Nials AT, Coleman AR, Johnson M, *et al*: The duration of action of non- β_2 -adrenoreceptor mediated responses to salmeterol. *Br J Pharmacol* 1997;120:961-967.

Nielson CP, Crowley JJ, Cusak BJ, *et al*: Therapeutic concentrations of theophylline and emprophylline potentiate catecholamine effects and inhibit leukocyte activation. *J Allergy Clin Immunol* 1986;78:660-667.

Nielson CP: β -adrenergic modulation of the polymorphonuclear leukocyte respiratory burst is dependent upon the mechanism of cell activation. *J Immunol* 1987;139:2392-2397.

Nielson CP, Crowley JJ, Morgan ME, *et al*: Polymorphonuclear leukocyte inhibition by therapeutic concentrations of theophylline is mediated by cyclic-3',5'-adenosine monophosphate. *Am Rev Resp Dis* 1988;137:25-30.

Nielson CP, Vestal RE, Heaslip R, *et al*: Effects of selective phosphodiesterase inhibitors on the polymorphonuclear leukocyte respiratory burst. *J Allergy Clin Immunol* 1990;86:801-806.

Nutman J, Berger M, Chase PA, *et al*: Studies on the mechanism of T cell inhibition by the *Pseudomonas aeruginosa* phenazine pigment pyocyanine. *J Immunol* 1987;138(10):3481-3487.

Nusse O, Serrander L, Foyouzi-Youssefi R, *et al*: Store-operated Ca^{2+} influx and stimulation of exocytosis in HL-60 granulocytes. *J Biol Chem* 1997;272:28360-28367.

Oddera S, Silvestri M, Quaglia R, *et al*: The allergen-induced proliferative response of blood T-lymphocytes is inhibited in vitro by salmeterol via a β -adrenoreceptor pathway. *Eur Respir J* 1993;6:308S-314.

Olsson RA, Pearson JD: Cardiovascular purinoceptors. *Physiol Reviews* 1990;70(3):761-845.

Origini E, Fredholm BB: Pharmacology of adenosine A_{2a} receptors. *Trends Pharmacol Sci* 1996;17:364-372.

Ottonello L, Morone P, Dapino P, *et al*: Inhibitory effect of salmeterol on the respiratory burst of adherent human neutrophils. *Clin Exp Immunol* 1996;106:97-102.

Ottonello L, Goneella R, Dapino P, *et al*: Prostaglandin E₂ inhibits apoptosis in human neutrophilic polymorphonuclear leukocytes: role of intracellular cyclicAMP levels. *Exp Hematol* 1998;26(9):895-902.

Paul BB, Selvaraj RJ, Sbarra AJ: A sensitive assay method for peroxidases from various sources. *J Reticuloendothelial Soc* 1978;23:407-410.

Pauwels R: The effects of theophylline on airway inflammation. *Chest* 1987;92:32S-37S.

Pearce FL, Befus AD, Gauldie J, *et al*: Effects of anti-allergic compounds on histamine secretion by isolated mast cells. *J Immunol* 1982;128:2481-2486.

Petersen M, Williams JD, Hallet MB: Cross-linking of CD11b or CD18 signals release of localised Ca²⁺ from intracellular stores in neutrophils. *Immunology* 1993;80:157-159.

Persson CGA: Xanthines as airway anti-inflammatory drugs. *J Allergy Clin Immunol* 1988;81:615-617.

Pier GB: Pulmonary disease associated with *Pseudomonas pyocyanea* in cystic fibrosis. *J Infect Dis* 1985;151:575-580.

Pober JS, Gimbrone MA, Lapierre LA, *et al*: Overlapping patterns of activation of human endothelial cells by interleukin 1, tumor necrosis factor, and immune interferon. ***J Immunol*** 1986;137:1893-1896.

Poucher SM, Keddie JR, Singh P, *et al*: The *in vitro* pharmacology of ZM241385, a potent, non-xanthine, A_{2a} selective adenosine receptor antagonist. ***Br J Pharmacol*** 1995;115:1096-1102.

Prentki M, Wollheim CB, Lew PD, *et al*: Ca²⁺ homeostasis in permeabilized human neutrophils: characterization of Ca²⁺-sequestering pools and the action of inositol 1,4,5-triphosphate. ***J Biol Chem*** 1984;259:13777-13782.

Ramage L, Blair AL, Cree IA: Effect of salmeterol on polymorphonuclear leukocyte (PMNL) chemiluminescence *in vitro*. ***J Biolumin Chemilumin*** 1993;8:247-252.

Ras GJ, Anderson R, Taylor GW, *et al*: Proinflammatory interactions of pyocyanin and 1-hydroxyphenazine with human neutrophils *in vitro*. ***JID*** 1990;162:178-185.

Ras GJ, Anderson R, Taylor GW, *et al*: Clindamycin, erythromycin, and roxithromycin inhibit the proinflammatory interactions of *Pseudomonas aeruginosa* pigments with human neutrophils *in vitro*. ***Antimicrob Agents Chemother*** 1992;36(6):1236-1240.

Reddington M, Lee KS: Adenosine receptor subtypes: Classification and distribution. In: Adenosine in the nervous system, 1991;pp.77-102, Stone, TW (Ed.) Academic Press, London.

Renz H, Gong J, Schmidt A, *et al*: Release of tumour necrosis factor- α from macrophages: enhancement and suppression are dose-dependently regulated by prostaglandin E₂ and cyclic nucleotides. ***J Immunol*** 1988;141:2388-2393.

Ribeiro JA: Purinergic inhibition of transmitter release in the central nervous system. ***Pharmacol Toxicol*** 1995;77:299-305.

Riordan JR, Rommens JM, Kerem BS, *et al*: Identification of the Cystic Fibrosis Gene: Cloning and characterization of complementary DNA. **Science** 1989;245:1066-1072.

Rivkin I, Rosenblatt J, Becker EL: The role of cAMP in the chemotactic responsiveness and spontaneous motility of rabbit peritoneal neutrophils. **J Immunol** 1975;115:1126-1134.

Rodenas J, Mitjavila MT, Carbonell T: Nitric oxide inhibits superoxide production by inflammatory polymorphonuclear leukocytes. **Am J Physiol** 1998;274:C827-C830.

Roten R, Markert M, Feihl F, *et al*: Plasma levels of tumour necrosis factor- α in the ARDS. **Am Rev Respir Dis** 1991;143:590-592.

Roum JH, Buhl R, McElvaney NG, *et al*: Cystic fibrosis is characterized by a marked reduction in glutathione levels in pulmonary epithelial lining fluid. **Am Rev Respir Dis** 1990;141(suppl):A87-A93.

Roveri A, Coassin M, Maiorino M, *et al*: Effect of hydrogen peroxide on calcium homeostasis in smooth muscle cells. **Arch Biochem Biophys** 1992;297:265-270.

Rubin HR, Sorenson RU, Chase PA, *et al*: Suppression of *in vitro* lymphocyte DNA synthesis by killed *Pseudomonas aeruginosa*. **Infect Immun** 1983;39(2):630-637.

Santing RE, Olymulder CG, Van der Molen K, *et al*: Phosphodiesterase inhibitors reduce bronchial hyperreactivity and airway inflammation in unrestrained guinea pigs. **Eur J Pharmacol** 1995;275(1):75-82.

Salvatore CA, Jacobson MA, Taylor HE, *et al*: Molecular cloning and characterization of the human A3 adenosine receptor. **Proc Natl Acad Sci USA** 1993;89:7432-7436.

Schatzmann JH: The calcium pump of the surface membrane and of the sarcoplasmic reticulum. **Ann Rev Physiol** 1989;51:473-485.

Schleimer RP, Rutledge B: Cultured human vascular endothelial cells acquire adhesiveness for neutrophils after stimulating with interleukin-1 endotoxin and tumor-promoting phorbol diesters. *J Immunol* 1986;136:649-654.

Scherrer U, Vollenweider L, Delabays A, *et al*: Inhaled nitric oxide for high altitude pulmonary edema. *The New Engl J Med* 1996;334(10):624-629.

Schoental R: The nature of the antibacterial agents present in *Pseudomonas pyocyanea* cultures. *Br J Exp Pathol* 1941;22:137-147.

Schudt C, Winder S, Forderkunn S, *et al*: Influence of selective phosphodiesterase inhibitors on human neutrophil functions and levels of cAMP and Ca_i. *Naunyn-Schmiedeberg's Arch Pharmacol* 1991;344:682-690.

Schudt C, Tenor H, Hatzelmann A: PDE Isoenzymes as targets for anti-asthma drugs. *Eur Respir J* 1995; 8: 1179-1183.

Schultz DR, Miller KD: Elastase of *Pseudomonas aeruginosa*: inactivation of complement components and complement-derived chemotactic and phagocytic factors. *Infect Immun* 1974;10:128-135.

Schuster A, Ueki I, Nadel JA: Neutrophil elastase stimulates tracheal submucosal gland secretion that is inhibited by ICI 200:355. *Am J Physiol* 1992;262:L86-L91.

Schwabe U, Miyake M, Ohga Y, *et al*: 4-(3-Cyclopentyloxy-4-methoxyphenyl)-2-pyrrolidone (ZK 62711): a potent inhibitor of adenosine cyclic 3',5'-monophosphate phosphodiesterases in homogenates and tissue slices from rat brain. *Molecular Pharmacol* 1976;12:900-910.

Seitz R, Wolf M, Egbring R, *et al*: Participation and interactions of neutrophil elastase in haemostatic disorders of patients with severe infections. *Eur J Haematol* 1987;38:231-240.

Sekut L, Champion BR, Page K, *et al*: Anti-inflammatory activity of salmeterol: down regulation of cytokine production. ***Clin Exp Immunol*** 1995;99:461-466.

Shibata K, Morita K, Kitayama S, *et al*: Ca^{2+} entry induced by calcium influx factor and its regulation by protein kinase C in rabbit neutrophils. ***Biochem Pharmacol*** 1996;52:167-171.

Si Q-S, Nakamura Y, Kataoka K: Adenosine inhibits superoxide production in rat peritoneal macrophages via elevation of cAMP levels. ***Immunopharmacol*** 1997;36:1-7.

Simchowitz L, Foy MA, Cragoe AJ: A role for Na/Ca exchange in the generation of superoxide radicals by human neutrophils. ***J Biol Chem*** 1990;265:13449-13456.

Smallman LA, Hill SL, Stockley RA: Reduction of ciliary beat frequency *in vitro* by sputum from patients with bronchiectasis: a serine proteinase effect. ***Thorax*** 1984;39:663-667.

Smith JA: Exercise immunology and neutrophils. ***Int J Sports Med*** 1997;S46-S55.

Sorenson RU, Kliger JD, Cash HA, *et al*: *In vitro* inhibition of lymphocyte proliferation by *Pseudomonas aeruginosa* phenazine pigments. ***Infect Immun*** 1983;41:321-330.

Sorensen RU and Kliger JD: Biological effects of *Pseudomonas aeruginosa* phenazine pigments. ***Antibiot Chemother*** 1987;39:113-124.

Sorensen RU, Tosi MF, *et al*: Complement receptor expression on neutrophils at an inflammatory site, the pseudomonas-infected lung in cystic fibrosis. ***J Clin Invest*** 1989;84:1302-1313.

Sottrup-Jensen L, Petersen TE, *et al*: A thiolester in α_2 -macroglobulin is cleaved during proteinase complex formation. ***FEBS*** 1980;121:275-279.

Stiles G: Adenosine receptors: structure, function and regulation. *TIPS reviews* 1986;7:486-490.

Stiles GL: Adenosine receptors. *J Biol Chem* 1992;267(10):6451-6454.

Sullivan GW, Carper HT, Mandell GL: The specific type 4 phosphodiesterase inhibitor rolipram combined with adenosine reduces tumor necrosis factor-alpha-primed neutrophil oxidative activity. *Int J Immunopharmacol* 1995;17(10):793-803.

Suter S, Schaad UB, Roux L, *et al*: Granulocyte neutral proteases and pseudomonas elastase as possible causes of airway damage in patients with cystic fibrosis. *J Infect Dis* 1984;149:523-531.

Suter S, Schaad UB, MorgenthalerJJ, *et al*: Fibronectin-cleaving activity in bronchial secretions of patients with cystic fibrosis. *J Infect Dis* 1988;158:89-100.

Tao J, Johansson JS, Haynes DH: Stimulation of dense tubular Ca^{2+} uptake in human platelets by cAMP. *Biochem Biophys Acta* 1992;1105:29-39.

Tattersfield AE: Clinical pharmacology of long-acting β -receptor agonists. *Life Sci* 1993;52:2161-2169.

Tashjian AH, Heslop JP, Berridge MJ: Subsecond and second changes in inositol polyphosphates induced in CH_4C cells induced by thyrotropin-releasing hormone. *Biochem J* 1987;243:305-308.

Thompson SM, Haas HL, Gahlwiler BH: Comparisons of the actions of adenosine at pre- and postsynaptic receptors in the rat hippocampus in vitro. *J Physiol* 1992;451:347-363.

Tizzano EF, Buchwald M: Cystic Fibrosis: Beyond the gene therapy. *J Paediatr* 1992;120:337-349.

Torphy TJ, Udem BJ: Phosphodiesterase inhibitors: new opportunities for the treatment of asthma. **Chest** 1991;46:512-523.

Torphy TJ: Phosphodiesterase Isozymes: Molecular targets for Novel Antiasthma Agents. **Am J Respir Crit Care Med** 1998;157:351-370.

Tosi MF, Zakem H, Berger M: Neutrophil elastase cleaves C3bi on opsonized Pseudomonas as well as CR1 on neutrophils to create a functionally important opsonin receptor mismatch. **J Clin Invest** 1990;86:300-308.

Trussell LD, Jackson MB: Adenosine activated potassium conductance in cultured striatal neurons. **Proc Natl Acad Sci USA** 1985;82:4857-4861.

Tsien RW, Tsien TY: Calcium channels, stores and oscillations. **Annu Rev Cell Biol** 1990;6:715-760.

Turner CR, Esser KM, Wheeldon ER: Therapeutic intervention in a rat model of ARDS: Phosphodiesterase IV inhibition. **Circ Shock** 1993;39:237-245.

Ulich TR, Watson LR, Yin S, *et al*: The intratracheal administration of endotoxin and cytokines. I: Characterization of LPS-induced TNF and IL-1 mRNA expression and the LPS-, TNF-, and IL-1-induced inflammatory infiltrate. **Am J Pathol** 1991;138:1485-1496.

Ulich TR, Yin S, Remick DG, *et al*: Intratracheal administration of endotoxin and cytokines. IV: The soluble TNF receptor type 1 inhibits acute inflammation. **Am J Pathol** 1993;142:1335-1338.

Umeki S: Mechanisms for the activation/electron transfer of neutrophil NADPH-oxidase complex and molecular pathology of chronic granulomatous disease. **Annals Hematol** 1994;68(6):267-277.

Udem BJ, Peachell PT, Lichtenstein LM: Isoproterenol-induced inhibition of IgE-mediated release of histamine and arachidonic acid metabolites from the human lung mast cell. **J Pharmacol Exp Ther** 1988;247:209-217.

Underwood DC, Bochnowicz S, Osborn RR, *et al*: Antiasthmatic activity of the second-generation phosphodiesterase 4 (PDE4) inhibitor SB207499 (Airflo) in the guinea pig. **The J Pharmacol and Exp Ther** 1998;287(3):988-995.

Vallette JP, Lacoste AM, Labeyrie S, *et al*: Influence of the orthophosphate ion and of various sources of phosphorus on chromogenesis in *Pseudomonas aeruginosa*. **Soc Biol** 1966;160:1562-1567.

Van Calker D, Muller M, Hamprecht B: Adenosine regulates via two different types of receptors, the accumulation of cAMP in cultured brain cells. **J Neurochem** 1979;33:999-1005.

Varani K, Gessi S, Dionisotti S, *et al*: [³H]-SCH 58261 labelling of functional A_{2a} adenosine receptors in human neutrophil membranes. **Br J Pharmacol** 1998;123:1723-1731.

Villagrasa V, Navarette C, Sanz C, *et al*: Inhibition of phosphodiesterase type 4 and intracellular calcium levels in human polymorphonuclear leukocytes. **Methods Fiind Exp Clin Pharmacol** 1996;18:239-245.

Vogelmeier C, Hubbard RC, Fells GA *et al*: Anti-neutrophil elastase defence of the normal human respiratory epithelial surface provided by the secretory leukoprotease inhibitor. **J Clin Invest** 1991;87:442-448.

Vogelmeier C, Doring G: Neutrophil proteinases and rhDNase therapy in cystic fibrosis. **Eur Respir J** 1996;9:2193-2195.

Volpi M, Naccache PH, Sha'afi RI: Calcium transport in inside-out membrane vesicles

prepared from rabbit neutrophils. *J Biol Chem* 1983;258:4153-4158.

Walker BAM, Jacobson MA, Knight DA, *et al*: Adenosine A3 receptor expression and function in eosinophils. *Am J Respir Cell Mol Biol* 1997;16:531-537.

Wanner A: Clinical aspects of mucociliary transport. *Am Rev Respir Dis* 1977;116:73-125.

Wardlaw AJ, Dunnette S, Gleich GJ, *et al*: Eosinophils and mast cells in bronchoalveolar lavage in subjects with mild asthma. *Am Rev Respir Dis* 1988;137:62-69.

Watson D, MacDermot J, Wilson R, *et al*: Purification and structural analysis of pyocyanin and 1-Hydroxyphenazine. *Eur J Biochem* 1986;159:309-313.

Wayman MP, Von Tschamer V, Deranleau DA, *et al*: The onset of the respiratory burst in human neutrophils. Real time studies of H₂O₂ formation reveal a rapid agonist-induced transduction process. *J Biol Chem* 1987;262:12048-12053.

Wenzel SE, Szeffler SJ, Leung DY, *et al*: Bronchoscopic evaluation of severe asthma. Persistent inflammation associated with high dose glucocorticoid. *Am J Resp Crit Care Med* 1997;156(3):737-743.

Wewers MD, Herzyk DJ, Gadek JE: Alveolar fluid neutrophil elastase activity in the adult respiratory distress syndrome is complexed to α 2-macroglobulin. *J Clin Invest* 1988;82:1260-1267.

Welsh M, Tsui LC, Boat TF, *et al*: The metabolic and molecular basis of inherited disease, 7th edn., (Scriver CR, Beaudet *al*, Sly WS, *et al*, eds) 1995:3799-3876, McGraw-Hill, New York.

Whelan CJ, Johnson M, Vardey CJ: Comparison of the anti-inflammatory properties of

formoterol, salbutamol and salmeterol in guinea-pig skin and lung. *Br J Pharmacol* 1993;110:613-618.

Wilson R, Roberts D, Cole P: Effect of bacterial products on human ciliary function *in vitro*. *Thorax* 1985;40:125-131.

Wilson R, Tyrone P, Taylor G, *et al*: Pyocyanin and 1-hydroxyphenazine produced by *Pseudomonas aeruginosa* inhibit the beating of human respiratory cilia *in vitro*. *J Clin Invest* 1987;79:221-229.

Wilson R, Sykes DA, Watson D, *et al*: Measurement of *Pseudomonas aeruginosa* phenazine pigments in sputum and assessment of their contribution to sputum sol toxicity for respiratory epithelium. *Infect Immun* 1988;56:2515-2517.

Winklhofer-Roob BM: Oxygen free radicals and antioxidants in Cystic Fibrosis: the concept of an oxidant-antioxidant imbalance. *Acta Paediatr* 1994; Supp 195:49-57.

Woods DE, Bass JA, Johnson WG: Role of adherence in the pathogenesis of *Pseudomonas aeruginosa* lung infection in cystic fibrosis patients. *Infect Immun* 1980;30:694-699.

Woods DE, Sraus DC, Johanson WG: Role of salivary protease activity in adherence of gram-negative bacilli to mammalian buccal epithelial cells *in vivo*. *J Clin Invest* 1981;68:1435-1440.

Woods DE, Ccryz SJ, Friedman RL, *et al*: Contribution of toxin A and elastase to virulence of *Pseudomonas aeruginosa* in chronic lung infections of rats. *Infect Immun* 1982;36:1223-1228.

Yamamoto M, Sato N, Tajima H, *et al*: Induction of human thioredoxin in cultured human retinal pigment epithelial cells through cyclic AMP-dependent pathway; involvement in the cytoprotective activity of prostaglandin E1. *Exp Eye Res*

1997;65(5):645-652.

Yan SR, Fumagalli J, Berton G: Activation of p58(C-fgr) and p-53/56(lyn) in adherent human neutrophils: Evidence for a role of divalent cations in regulating neutrophil adhesion and protein tyrosine kinase activities. **J Inflamm** 1995;45:297-311.

Zach MS: Lung disease in cystic fibrosis: an updated concept. **Pediatr Pulmonology** 1990;8:188-202.

Zalavary S, Bengtsson T: Adenosine inhibits actin dynamics in human neutrophils: Evidence for the involvement of cAMP. **Eur J Cell Biol** 1998;75:128-139.

Zhao ZQ, Sato H, Williams MW, *et al*: Adenosine A2-receptor activation inhibits neutrophil-mediated injury to coronary endothelium. **Am J Physiol** 1996;271(4Pt2):H1456-H1464.

Zhou Q-Y, Li C, Olah ME, *et al*: Molecular cloning and characterization of an adenosine receptor: The A3 adenosine receptor. **Proc Natl Acad Sci USA** 1992;89:7432-7436.

Zocchi MR, Pardi R, Gromo G, *et al*: Theophylline-induced nonspecific suppressor cell activity in human peripheral blood lymphocytes. **J Immunopharmacol** 1985;7:217-234.



APPENDICES

APPENDIX 1

0.83% Ammonium chloride

8.3g NH₄Cl (Merck, Germany)

1.0g NaHCO₃ (Merck, Germany)

74mg EDTA (Sigma, USA)

1000ml distilled, deionized water (dH₂O)

APPENDIX 2

Hank's balanced salt solution (HBSS)

Commercial solution at pH 7.4. Supplied by Highveld Biological (Kelvin, RSA)

APPENDIX 3

Phosphate buffered salt solution (PBS)

9.23g FTA PBS (BBL, Becton Dickinson, Cockeysville, USA)

1000ml distilled, deionized water (dH₂O)

pH set at 7.4

APPENDIX 4

Heparin

90mg preservative-free Heparin (Sigma)

30ml dH₂O

Filter sterilize

APPENDIX 5

3% Gelatin

3g gelatin

100ml PBS



APPENDIX 6

Counting Fluid

1mg 0.1% Crystal Violet

2ml Acetic acid

100ml dH₂O

formation, proliferation and induction of cytolytic activity. ***Eur J Immunol*** 1986;16:434-440.

Munro NC, Barker A, Rutman A, *et al*: The effect of pyocyanine and 1-Hydroxyphenazine on *in vivo* tracheal mucus velocity. ***J Appl Physiol*** 1989;76:316-323.

Munshi R, Pang IH, Sternweis PC, *et al*: A1 adenosine receptors of bovine brain couple to guanine nucleotide-binding proteins G_{i1} , G_{i2} and G_{i0} . ***J Biol Chem*** 1991;266:22285-22289.

Naccache PH, Showell HJ, Becker EL, *et al*: Transport of sodium, potassium and calcium across rabbit polymorphonuclear leukocyte membranes. ***J Cell Biol*** 1977;73:428-444.

Nakashima S, Mizutani T, Nakamura Y, *et al*: Effects of selective phosphodiesterase type 4 inhibitor, rolipram, on signal transducing phospholipases in neutrophil: inhibition of phospholipases A2 and D. ***Comparative Biochem Biophys. Part C, Pharmacol Toxicol Endocrinol*** 1995;112(2):137-143.

Nasmith PE, Griinstein S: Phorbol ester-induced changes in cytoplasmic calcium in human neutrophils. ***J Biol Chem*** 1987;262:13558-13566.

Nathan CF: Secretory products of macrophages. ***J Clin Invest*** 1987;79:319-326.

Nathan CF: Neutrophil activation on biological surfaces. Massive secretion of hydrogen peroxide in response to products of macrophages and lymphocytes. ***J Clin Invest*** 1987;80:1550-1560.

Nathan C: Nitric oxide as a secretory product of mammalian cells. ***Faseb J*** 1992;6(12):3051-3064.

Nials AT, Coleman AR, Johnson M, *et al*: Effects of adrenoreceptor agonists in human bronchial smooth muscle. ***Br J Pharmacol*** 1993;110:1112-1116.

Nials AT, Coleman AR, Johnson M, *et al*: The duration of action of non- β_2 -adrenoreceptor mediated responses to salmeterol. ***Br J Pharmacol*** 1997;120:961-967.

Nielson CP, Crowley JJ, Cusak BJ, *et al*: Therapeutic concentrations of theophylline and emprophylline potentiate catecholamine effects and inhibit leukocyte activation. ***J Allergy Clin Immunol*** 1986;78:660-667.

Nielson CP: β -adrenergic modulation of the polymorphonuclear leukocyte respiratory burst is dependent upon the mechanism of cell activation. ***J Immunol*** 1987;139:2392-2397.

Nielson CP, Crowley JJ, Morgan ME, *et al*: Polymorphonuclear leukocyte inhibition by therapeutic concentrations of theophylline is mediated by cyclic-3',5'-adenosine monophosphate. ***Am Rev Resp Dis*** 1988;137:25-30.

Nielson CP, Vestal RE, Heaslip R, *et al*: Effects of selective phosphodiesterase inhibitors on the polymorphonuclear leukocyte respiratory burst. ***J Allergy Clin Immunol*** 1990;86:801-806.

Nutman J, Berger M, Chase PA, *et al*: Studies on the mechanism of T cell inhibition by the *Pseudomonas aeruginosa* phenazine pigment pyocyanine. ***J Immunol*** 1987;138(10):3481-3487.

Nusse O, Serrander L, Foyouzi-Youssefi R, *et al*: Store-operated Ca^{2+} influx and stimulation of exocytosis in HL-60 granulocytes. ***J Biol Chem*** 1997;272:28360-28367.

Oddera S, Silvestri M, Quaglia R, *et al*: The allergen-induced proliferative response of blood T-lymphocytes is inhibited in vitro by salmeterol via a β -adrenoreceptor pathway. ***Eur Respir J*** 1993;6:308S-314.

Olsson RA, Pearson JD: Cardiovascular purinoceptors. *Physiol Reviews* 1990;70(3):761-845.

Origini E, Fredholm BB: Pharmacology of adenosine A2a receptors. *Trends Pharmacol Sci* 1996;17:364-372.

Ottonello L, Morone P, Dapino P, *et al*: Inhibitory effect of salmeterol on the respiratory burst of adherent human neutrophils. *Clin Exp Immunol* 1996;106:97-102.

Ottonello L, Goneella R, Dapino P, *et al*: Prostaglandin E2 inhibits apoptosis in human neutrophilic polymorphonuclear leukocytes: role of intracellular cyclicAMP levels. *Exp Hematol* 1998;26(9):895-902.

Paul BB, Selvaraj RJ, Sbarra AJ: A sensitive assay method for peroxidases from various sources. *J Reticuloendothelial Soc* 1978;23:407-410.

Pauwels R: The effects of theophylline on airway inflammation. *Chest* 1987;92:32S-37S.

Pearce FL, Befus AD, Gauldie J, *et al*: Effects of anti-allergic compounds on histamine secretion by isolated mast cells. *J Immunol* 1982;128:2481-2486.

Petersen M, Williams JD, Hallet MB: Cross-linking of CD11b or CD18 signals release of localised Ca²⁺ from intracellular stores in neutrophils. *Immunology* 1993;80:157-159.

Persson CGA: Xanthines as airway anti-inflammatory drugs. *J Allergy Clin Immunol* 1988;81:615-617.

Pier GB: Pulmonary disease associated with *Pseudomonas pyocyanea* in cystic fibrosis. *J Infect Dis* 1985;151:575-580.

Pober JS, Gimbrone MA, Lapierre LA, *et al*: Overlapping patterns of activation of human endothelial cells by interleukin 1, tumor necrosis factor, and immune interferon. ***J Immunol*** 1986;137:1893-1896.

Poucher SM, Keddie JR, Singh P, *et al*: The *in vitro* pharmacology of ZM241385, a potent, non-xanthine, A_{2a} selective adenosine receptor antagonist. ***Br J Pharmacol*** 1995;115:1096-1102.

Prentki M, Wollheim CB, Lew PD, *et al*: Ca²⁺ homeostasis in permeabilized human neutrophils: characterization of Ca²⁺-sequestering pools and the action of inositol 1,4,5-triphosphate. ***J Biol Chem*** 1984;259:13777-13782.

Ramage L, Blair AL, Cree IA: Effect of salmeterol on polymorphonuclear leukocyte (PMNL) chemiluminescence *in vitro*. ***J Biolumin Chemilumin*** 1993;8:247-252.

Ras GJ, Anderson R, Taylor GW, *et al*: Proinflammatory interactions of pyocyanin and 1-hydroxyphenazine with human neutrophils *in vitro*. ***JID*** 1990;162:178-185.

Ras GJ, Anderson R, Taylor GW, *et al*: Clindamycin, erythromycin, and roxithromycin inhibit the proinflammatory interactions of *Pseudomonas aeruginosa* pigments with human neutrophils *in vitro*. ***Antimicrob Agents Chemother*** 1992;36(6):1236-1240.

Reddington M, Lee KS: Adenosine receptor subtypes: Classification and distribution. In: Adenosine in the nervous system, 1991;pp.77-102, Stone, TW (Ed.) Academic Press, London.

Renz H, Gong J, Schmidt A, *et al*: Release of tumour necrosis factor- α from macrophages: enhancement and suppression are dose-dependently regulated by prostaglandin E₂ and cyclic nucleotides. ***J Immunol*** 1988;141:2388-2393.

Ribeiro JA: Purinergic inhibition of transmitter release in the central nervous system. ***Pharmacol Toxicol*** 1995;77:299-305.

Riordan JR, Rommens JM, Kerem BS, *et al*: Identification of the Cystic Fibrosis Gene: Cloning and characterization of complementary DNA. **Science** 1989;245:1066-1072.

Rivkin I, Rosenblatt J, Becker EL: The role of cAMP in the chemotactic responsiveness and spontaneous motility of rabbit peritoneal neutrophils. **J Immunol** 1975;115:1126-1134.

Rodenas J, Mitjavila MT, Carbonell T: Nitric oxide inhibits superoxide production by inflammatory polymorphonuclear leukocytes. **Am J Physiol** 1998;274:C827-C830.

Roten R, Markert M, Feihl F, *et al*: Plasma levels of tumour necrosis factor- α in the ARDS. **Am Rev Respir Dis** 1991;143:590-592.

Roum JH, Buhl R, McElvaney NG, *et al*: Cystic fibrosis is characterized by a marked reduction in glutathione levels in pulmonary epithelial lining fluid. **Am Rev Respir Dis** 1990;141(suppl):A87-A93.

Roveri A, Coassin M, Maiorino M, *et al*: Effect of hydrogen peroxide on calcium homeostasis in smooth muscle cells. **Arch Biochem Biophys** 1992;297:265-270.

Rubin HR, Sorenson RU, Chase PA, *et al*: Suppression of *in vitro* lymphocyte DNA synthesis by killed *Pseudomonas aeruginosa*. **Infect Immun** 1983;39(2):630-637.

Santing RE, Olymulder CG, Van der Molen K, *et al*: Phosphodiesterase inhibitors reduce bronchial hyperreactivity and airway inflammation in unrestrained guinea pigs. **Eur J Pharmacol** 1995;275(1):75-82.

Salvatore CA, Jacobson MA, Taylor HE, *et al*: Molecular cloning and characterization of the human A3 adenosine receptor. **Proc Natl Acad Sci USA** 1993;89:7432-7436.

Schatzmann JH: The calcium pump of the surface membrane and of the sarcoplasmic reticulum. **Ann Rev Physiol** 1989;51:473-485.

Schleimer RP, Rutledge B: Cultured human vascular endothelial cells acquire adhesiveness for neutrophils after stimulating with interleukin-1 endotoxin and tumor-promoting phorbol diesters. **J Immunol** 1986;136:649-654.

Scherrer U, Vollenweider L, Delabays A, *et al*: Inhaled nitric oxide for high altitude pulmonary edema. **The New Engl J Med** 1996;334(10):624-629.

Schoental R: The nature of the antibacterial agents present in *Pseudomonas pyocyanea* cultures. **Br J Exp Pathol** 1941;22:137-147.

Schudt C, Winder S, Forderkunnz S, *et al*: Influence of selective phosphodiesterase inhibitors on human neutrophil functions and levels of cAMP and Ca_i. **Naunyn-Schmiedeberg's Arch Pharmacol** 1991;344:682-690.

Schudt C, Tenor H, Hatzelmann A: PDE Isoenzymes as targets for anti-asthma drugs. **Eur Respir J** 1995; 8: 1179-1183.

Schultz DR, Miller KD: Elastase of *Pseudomonas aeruginosa*: inactivation of complement components and complement-derived chemotactic and phagocytic factors. **Infect Immun** 1974;10:128-135.

Schuster A, Ueki I, Nadel JA: Neutrophil elastase stimulates tracheal submucosal gland secretion that is inhibited by ICI 200:355. **Am J Physiol** 1992;262:L86-L91.

Schwabe U, Miyake M, Ohga Y, *et al*: 4-(3-Cyclopentyloxy-4-methoxyphenyl)-2-pyrrolidone (ZK 62711): a potent inhibitor of adenosine cyclic 3',5'-monophosphate phosphodiesterases in homogenates and tissue slices from rat brain. **Molecular Pharmacol** 1976;12:900-910.

Seitz R, Wolf M, Egbring R, *et al*: Participation and interactions of neutrophil elastase in haemostatic disorders of patients with severe infections. **Eur J Haematol** 1987;38:231-240.

Sekut L, Champion BR, Page K, *et al*: Anti-inflammatory activity of salmeterol: down regulation of cytokine production. ***Clin Exp Immunol*** 1995;99:461-466.

Shibata K, Morita K, Kitayama S, *et al*: Ca^{2+} entry induced by calcium influx factor and its regulation by protein kinase C in rabbit neutrophils. ***Biochem Pharmacol*** 1996;52:167-171.

Si Q-S, Nakamura Y, Kataoka K: Adenosine inhibits superoxide production in rat peritoneal macrophages via elevation of cAMP levels. ***Immunopharmacol*** 1997;36:1-7.

Simchowicz L, Foy MA, Cragoe AJ: A role for Na/Ca exchange in the generation of superoxide radicals by human neutrophils. ***J Biol Chem*** 1990;265:13449-13456.

Smallman LA, Hill SL, Stockley RA: Reduction of ciliary beat frequency *in vitro* by sputum from patients with bronchiectasis: a serine proteinase effect. ***Thorax*** 1984;39:663-667.

Smith JA: Exercise immunology and neutrophils. ***Int J Sports Med*** 1997;S46-S55.

Sorenson RU, Klinger JD, Cash HA, *et al*: *In vitro* inhibition of lymphocyte proliferation by *Pseudomonas aeruginosa* phenazine pigments. ***Infect Immun*** 1983;41:321-330.

Sorensen RU and Klinger JD: Biological effects of *Pseudomonas aeruginosa* phenazine pigments. ***Antibiot Chemother*** 1987;39:113-124.

Sorensen RU, Tosi MF, *et al*: Complement receptor expression on neutrophils at an inflammatory site, the pseudomonas-infected lung in cystic fibrosis. ***J Clin Invest*** 1989;84:1302-1313.

Sottrup-Jensen L, Petersen TE, *et al*: A thiolester in α_2 -macroglobulin is cleaved during proteinase complex formation. ***FEBS*** 1980;121:275-279.

Stiles G: Adenosine receptors: structure, function and regulation. *TIPS reviews* 1986;7:486-490.

Stiles GL: Adenosine receptors. *J Biol Chem* 1992;267(10):6451-6454.

Sullivan GW, Carper HT, Mandell GL: The specific type 4 phosphodiesterase inhibitor rolipram combined with adenosine reduces tumor necrosis factor-alpha-primed neutrophil oxidative activity. *Int J Immunopharmacol* 1995;17(10):793-803.

Suter S, Schaad UB, Roux L, *et al*: Granulocyte neutral proteases and pseudomonas elastase as possible causes of airway damage in patients with cystic fibrosis. *J Infect Dis* 1984;149:523-531.

Suter S, Schaad UB, MorgenthalerJJ, *et al*: Fibronectin-cleaving activity in bronchial secretions of patients with cystic fibrosis. *J Infect Dis* 1988;158:89-100.

Tao J, Johansson JS, Haynes DH: Stimulation of dense tubular Ca^{2+} uptake in human platelets by cAMP. *Biochem Biophys Acta* 1992;1105:29-39.

Tattersfield AE: Clinical pharmacology of long-acting β -receptor agonists. *Life Sci* 1993;52:2161-2169.

Tashjian AH, Heslop JP, Berridge MJ: Subsecond and second changes in inositol polyphosphates induced in CH_4C cells induced by thyrotropin-releasing hormone. *Biochem J* 1987;243:305-308.

Thompson SM, Haas HL, Gahlwiler BH: Comparisons of the actions of adenosine at pre- and postsynaptic receptors in the rat hippocampus in vitro. *J Physiol* 1992;451:347-363.

Tizzano EF, Buchwald M: Cystic Fibrosis: Beyond the gene therapy. *J Paediatr* 1992;120:337-349.



APPENDICES



APPENDIX 1

0.83% Ammonium chloride

8.3g NH₄Cl (Merck, Germany)

1.0g NaHCO₃ (Merck, Germany)

74mg EDTA (Sigma, USA)

1000ml distilled, deionized water (dH₂O)

APPENDIX 2

Hank's balanced salt solution (HBSS)

Commercial solution at pH 7.4. Supplied by Highveld Biological (Kelvin, RSA)

APPENDIX 3

Phosphate buffered salt solution (PBS)

9.23g FTA PBS (BBL, Becton Dickinson, Cockeysville, USA)

1000ml distilled, deionized water (dH₂O)

pH set at 7.4

APPENDIX 4

Heparin

90mg preservative-free Heparin (Sigma)

30ml dH₂O

Filter sterilize

APPENDIX 5

3% Gelatin

3g gelatin

100ml PBS



APPENDIX 6

Counting Fluid

1mg 0.1% Crystal Violet

2ml Acetic acid

100ml dH₂O