

8 LITERATURVERZEICHNIS

- [1] GROSJEAN P. *et al.* Photodynamic therapy for cancer of the upper aerodigestive tract using tetra(m-hydroxyphenyl)chlorin. *J. Clin. Laser Med. Surg.* 14, 281-287 (1996).
- [2] KATO H., OKUNAKA T. & SHIMATANI H. Photodynamic therapy for early stage bronchogenic carcinoma. *J. Clin. Laser Med. Surg.* 14, 235-238 (1996).
- [3] TAN W.C. *et al.* Photodynamic therapy using 5-aminolaevulinic acid for oesophageal adenocarcinoma associated with Barrett's metaplasia. *J. Photochem. Photobiol. B* 53, 75-80 (1999).
- [4] BARR H. *et al.* Eradication of high-grade dysplasia in columnar-lined (Barrett's) oesophagus by photodynamic therapy with endogenously generated protoporphyrin IX. *Lancet* 348, 584-585 (1996).
- [5] BLUMENKRANZ M.S. *et al.* Verteporfin therapy for subfoveal choroidal neovascularization in age-related macular degeneration: three-year results of an open-label extension of 2 randomized clinical trials--TAP Report no. 5. *Arch. Ophthalmol.* 120, 1307-1314 (2002).
- [6] DONATI G., KAPETANIOS A.D. & POURNARAS C.J. Principles of treatment of choroidal neovascularization with photodynamic therapy in age-related macular degeneration. *Semin. Ophthalmol.* 14, 2-10 (1999).
- [7] BELLNIER D.A., HO K., PANDEY R.K., MISSERT J. & DOUGHERTY T.J. Distribution and elucidation of the tumor-localizing component of hematoporphyrin derivative in mice. *Photochem. Photobiol.* 50, 221-228 (1989).
- [8] CHAN W.S., MARSHALL J.F., LAM G.Y.F. & HART I.R. Tissue uptake, distribution and potency of the photoactivatable dye chloraluminium sulfonated phthalocyanine in mice bearing transplantable tumors. *Cancer Res.* 48, 3040-3044 (1988).
- [9] GOMER C.J. & FERRARIO A. Tissue distribution and photosensitizing properties of mono-L-aspartyl chlorin e6 in a mouse tumor model. *Cancer Res.* 50, 3985-3990 (1990).
- [10] RICHTER A.M., CERRITO-SOLA S., STERNBERG E.D., DOLPHIN D. & LEVY J.G. Biodistribution of tritiated benzoporphyrin derivative (3H-BPD-MA), a new potent photosensitizer in normal and tumor-bearing mice. *J. Photochem. Photobiol. B* 5, 231-244 (1990).
- [11] AL WATBAN F.A. Photodynamic therapy: tumor volume limitation and tumor response for murine fibrosarcoma. *Lasers Surg. Med.* 10, 165-172 (1990).
- [12] CHATTERJEE S.R. *et al.* Photodynamic effects induced by meso-tetrakis[4-(carboxymethyleneoxy)phenyl] porphyrin on isolated Sarcoma 180 ascites mitochondria. *J. Photochem. Photobiol. B* 50, 79-87 (1999).

- [13] CHEN B. & DE WITTE P.A. Photodynamic therapy efficacy and tissue distribution of hypericin in a mouse P388 lymphoma tumor model. *Cancer Lett.* 150, 111-117 (2000).
- [14] CUI J.H., ZHENG S. & WU J.M. Photodynamic effect of chlorophyll derivative (CPD4) with pulsed copper-vapor laser on mouse transplanted tumor. *Zhonghua Zhong. Liu Za Zhi.* 16, 106-110 (1994).
- [15] HADDAD R. *et al.* In vitro and in vivo effects of photodynamic therapy on murine malignant melanoma. *Ann. Surg. Oncol.* 5, 241-247 (1998).
- [16] PENG Q., MOAN J., MA L.W. & NESLAND J.M. Uptake, localization, and photodynamic effect of meso-tetra(hydroxyphenyl)porphine and its corresponding chlorin in normal and tumor tissues of mice bearing mammary carcinoma. *Cancer Res.* 55, 2620-2626 (1995).
- [17] YAMASHITA Y. *et al.* Photodynamic therapy using pheophorbide-a and Q-switched Nd:YAG laser on implanted human hepatocellular carcinoma. *Gastroenterol. Jpn.* 26, 623-627 (1991).
- [18] OLEINICK N.L. & EVANS H.H. The photobiology of photodynamic therapy: cellular targets and mechanisms. *Radiat. Res.* 150, S146-S156 (1998).
- [19] CHATLANI P.T. *et al.* Selective necrosis in hamster pancreatic tumours using photodynamic therapy with phthalocyanine photosensitization. *Br. J. Surg.* 79, 786-790 (1992).
- [20] LIN G.C. *et al.* Skin necrosis due to photodynamic action of benzoporphyrin depends on circulating rather than tissue drug levels: implications for control of photodynamic therapy. *Photochem. Photobiol.* 68, 575-583 (1998).
- [21] MALL J.W. *et al.* Esophageal necrosis and perforation of the left main bronchus following photodynamic therapy of esophageal carcinoma. *Thorac. Cardiovasc. Surg.* 50, 111-113 (2002).
- [22] BUCHI E.R. & SZCZESNY P.J. Necrosis and apoptosis in neuroretina and pigment epithelium after diffuse photodynamic action in rats: a light and electron microscopic study. *Jpn. J. Ophthalmol.* 40, 1-11 (1996).
- [23] ENGBRECHT B.W., MENON C., KACHUR A.V., HAHN S.M. & FRAKER D.L. Photofrin-mediated photodynamic therapy induces vascular occlusion and apoptosis in a human sarcoma xenograft model. *Cancer Res.* 59, 4334-4342 (1999).
- [24] GAD F., VIAU G., BOUSHIRA M., BERTRAND R. & BISSONNETTE R. Photodynamic therapy with 5-aminolevulinic acid induces apoptosis and caspase activation in malignant T cells. *J. Cutan. Med. Surg.* 5, 8-13 (2001).
- [25] HE X.Y., SIKES R.A., THOMSEN S., CHUNG L.W. & JACQUES S.L. Photodynamic therapy with photofrin II induces programmed cell death in carcinoma cell lines. *Photochem. Photobiol.* 59, 468-473 (1994).

- [26] KIM H.R., LUO Y., LI G. & KESSEL D. Enhanced apoptotic response to photodynamic therapy after bcl-2 transfection. *Cancer Res.* 59, 3429-3432 (1999).
- [27] HERMAN S., KALECHMAN Y., GAFTER U., SREDNI B. & MALIK Z. Photofrin II induces cytokine secretion by mouse spleen cells and human peripheral mononuclear cells. *Immunopharmacology* 31, 195-204 (1996).
- [28] GOLLNICK S.O., LIU X., OWCZARCZAK B., MUSSER D.A. & HENDERSON B.W. Altered expression of interleukin 6 and interleukin 10 as a result of photodynamic therapy in vivo. *Cancer Res.* 57, 3904-3909 (1997).
- [29] BREIDER M.A., LU X., PANJEHPOUR M. & FRAZIER D.L. Cytokine modulation of endothelial cell sensitivity to photodynamic therapy. *Lasers Surg. Med.* 13, 305-311 (1993).
- [30] HENDERSON B.W. & DONOVAN J.M. Release of prostaglandin E2 from cells by photodynamic treatment in vivo. *Cancer Res.* 49, 6896-6900 (1989).
- [31] ALBERTS B. *et al. Essential Cell Biology.* Garland, (1998).
- [32] SALET C. & MORENO G. New trends in photobiology. Photosensitization of mitochondria. molecular and cellular aspects. *J. Photochem. Photobiol. B.* 5, 133-150 (1990).
- [33] SALET C., MORENO G. & RICCHELLI F. Effects of Photofrin photodynamic action on mitochondrial respiration and superoxide radical generation. *Free Radic. Res.* 26, 201-208 (1997).
- [34] EVANS W.H. & GRAHAM J.M. *Membrane Structure and Function.* Oxford University Press, (1989).
- [35] JAIN M.K. & WAGNER R.C. *Introduction to Biological Membranes.* Wiley (1980).
- [36] HSIEH Y.J., WU C.C., CHANG C.J. & YU J.S. Subcellular localization of Photofrin determines the death phenotype of human epidermoid carcinoma A431 cells triggered by photodynamic therapy: when plasma membranes are the main targets. *J. Cell Physiol* 194, 363-375 (2003).
- [37] EVANS H.H., HORNG M.F., RICANATI M., DEAHL J.T. & OLEINICK N.L. Mutagenicity of photodynamic therapy as compared to UVC and ionizing radiation in human and murine lymphoblast cell lines. *Photochem. Photobiol.* 66, 690-696 (1997).
- [38] VERNA L.K., CHEN D., SCHLUTER G. & WILLIAMS G.M. Inhibition by singlet oxygen quenchers of oxidative damage to DNA produced in cultured cells by exposure to a quinolone antibiotic and ultraviolet A irradiation. *Cell Biol. Toxicol.* 14, 237-242 (1998).
- [39] NIEUWINT A.W. *et al.* Inability of chemically generated singlet oxygen to break the DNA backbone. *Free Radic. Res. Commun.* 1, 1-9 (1985).

- [40] ATHAR M., MUKHTAR H. & BICKERS D.R. Differential role of reactive oxygen intermediates in photofrin-I- and photofrin-II-mediated photoenhancement of lipid peroxidation in epidermal microsomal membranes. *J. Invest Dermatol.* 90, 652-657 (1988).
- [41] SORTINO S., GIUFFRIDA S. & SCAIANO J.C. Phototoxicity of naphazoline. Evidence that hydrated electrons, nitrogen-centered radicals, and OH radicals trigger DNA damage: a combined photocleavage and laser flash photolysis study. *Chem. Res. Toxicol.* 12, 971-978 (1999).
- [42] MORENO G., POUSSIN K., RICCHELLI F. & SALET C. The effects of singlet oxygen produced by photodynamic action on the mitochondrial permeability transition differ in accordance with the localization of the sensitizer. *Arch. Biochem. Biophys.* 386, 243-250 (2001).
- [43] PERLIN D.S., MURANT R.S., GIBSON S.L. & HILF R. Effects of photosensitization by hematoporphyrin derivative on mitochondrial adenosine triphosphatase-mediated proton transport and membrane integrity of R3230AC mammary adenocarcinoma. *Cancer Res.* 45, 653-658 (1985).
- [44] PERKINS M.J. *Radical Chemistry*. Ellis Horwood, (1994).
- [45] LEHNINGER A.L., NELSON D.L. & COX M.M. *Principles of Biochemistry*. Worth, (2000).
- [46] NIELSEN F.U. *et al.* Effect of changing tumor oxygenation on glycolytic metabolism in a murine C3H mammary carcinoma assessed by in vivo nuclear magnetic resonance spectroscopy. *Cancer Res.* 61, 5318-5325 (2001).
- [47] ESKEY C.J., KORETSKY A.P., DOMACH M.M. & JAIN R.K. Role of oxygen vs. glucose in energy metabolism in a mammary carcinoma perfused ex vivo: direct measurement by ³¹P NMR. *Proc. Natl. Acad. Sci. U. S. A* 90, 2646-2650 (1993).
- [48] BERENBAUM M.C., HALL G.W. & HOYES A.D. Cerebral photosensitisation by haematoporphyrin derivative. Evidence for an endothelial site of action. *Br. J. Cancer* 53, 81-89 (1986).
- [49] GRANT W.E., SPEIGHT P.M., HOPPER C. & BOWN S.G. Photodynamic therapy: an effective, but non-selective treatment for superficial cancers of the oral cavity. *Int. J. Cancer* 71, 937-942 (1997).
- [50] MOORE J.V., WEST C.M. & WHITEHURST C. The biology of photodynamic therapy. *Phys. Med. Biol.* 42, 913-935 (1997).
- [51] CALZAVARA-PINTON P.G., SZEIMIES R.M., ORTEL B. & ZANE C. Photodynamic therapy with systemic administration of photosensitizers in dermatology. *J. Photochem. Photobiol. B.* 36, 225-231 (1996).

- [52] FEYH J. Photodynamic treatment for cancers of the head and neck. *J. Photochem. Photobiol. B.* 36, 175-177 (1996).
- [53] LIM H.W. Effects of porphyrins on skin. *Ciba. Found. Symp.* 146, 158 (1989).
- [54] BOEHNCKE W.H. *et al.* Photodynamic therapy in psoriasis: suppression of cytokine production in vitro and recording of fluorescence modification during treatment in vivo. *Arch. Dermatol. Res.* 286, 300-303 (1994).
- [55] SCHWEITZER V.G. Photodynamic therapy for treatment of head and neck cancer. *Otolaryngol. Head Neck Surg.* 102, 225-232 (1990).
- [56] DELBOVE H., DE CORBIERE S., FUGAIN C., FRECHE C. & CHABOLLE F. Photochemotherapy in the treatment of carcinoma of the vocal cords of early stage (Tis, T1). *Ann. Otolaryngol. Chir. Cervicofac.* 113, 155-161 (1996).
- [57] FEYH J., GUTMANN R. & LEUNIG A. Photodynamic laser therapy in the field of otorhinolaryngology. *Laryngorhinootologie* 72, 273-278 (1993).
- [58] OVERHOLT B.F., PANJEHPOUR M. & HAYDEK J.M. Photodynamic therapy for Barrett's esophagus: follow-up in 100 patients. *Gastrointest. Endosc.* 49, 1-7 (1999).
- [59] SAVARY J.F. *et al.* Photodynamic therapy of early squamous cell carcinomas of the esophagus: a review of 31 cases. *Endoscopy* 30, 258-265 (1998).
- [60] KOREN H. & ALTH G. Photodynamic therapy in gynaecologic cancer. *J. Photochem. Photobiol. B.* 36, 189-191 (1996).
- [61] TSUKAGOSHI S. Porfimer sodium (Photofrin-II). *Gan. To. Kagaku. Ryoho.* 22, 1271-1278 (1995).
- [62] CADET J. *et al.* Photosensitized reactions of nucleic acids. *Biochimie* 68, 813-834 (1986).
- [63] CHANG C.J., LEE Y.H., YANG J.Y., WENG C.J. & WEI F.C. Pilot in vitro toxicity study of 5-ALA and Photofrin in microvascular endothelial cell cultures. *J. Clin. Laser Med. Surg.* 15, 83-87 (1997).
- [64] VONARX-COINSMAN V. *et al.* HepG2 human hepatocarcinoma cells: an experimental model for photosensitization by endogenous porphyrins. *J. Photochem. Photobiol. B.* 30, 201-208 (1995).
- [65] FIEDLER D.M., KRAMMER B. & ECKL P.M. Cyto- and genotoxic potential of the photosensitizer Photosan 3 in the absence of light. *J. Photochem. Photobiol. B.* 22, 241-246 (1994).

- [66] Forschungszentrum Seibersdorf. Acute intravenous Toxicity of 'Photosan-3' in rats. 1990.
Ref Type: Report
- [67] DOUGHERTY T.J. Photodynamic therapy - new approaches. *Semin Surg Oncol* 5 (1989) 6-16 (1989).
- [68] BALL D.J. *et al.* The characterisation of three substituted zinc phthalocyanines of differing charge for use in photodynamic therapy. A comparative study of their aggregation and photosensitising ability in relation to mTHPC and polyhaematoporphyrin. *J. Photochem. Photobiol. B* 45, 28-35 (1998).
- [69] NELSON J.S., LIAW L.H., ORENSTEIN A., ROBERTS W.G. & BERNS M.W. Mechanism of tumor destruction following photodynamic therapy with hematoporphyrin derivative, chlorin, and phthalocyanine. *J. Natl. Cancer Inst.* 80, 1599-1605 (1988).
- [70] BROWN S.B. & MELLISH K.J. Verteporfin: a milestone in ophthalmology and photodynamic therapy. *Expert. Opin. Pharmacother.* 2, 351-361 (2001).
- [71] HENDERSON B.W. & BELLNIER D.A. Tissue localization of photosensitizers and the mechanism of photodynamic tissue destruction. *Ciba Found. Symp.* 146:112-25; discussion 125-30., 112-125 (1989).
- [72] LARROQUE C., PELEGRIN A. & VAN LIER J.E. Serum albumin as a vehicle for zinc phthalocyanine: photodynamic activities in solid tumour models. *Br. J. Cancer* 74, 1886-1890 (1996).
- [73] MORI M. *et al.* In vitro plasma protein binding and cellular uptake of ATX-S10(Na), a hydrophilic chlorin photosensitizer. *Jpn. J. Cancer Res.* 91, 845-852 (2000).
- [74] KONGSHAUG M., MOAN J. & BROWN S.B. The distribution of porphyrins with different tumor localizing ability among human plasma proteins. *Br. J. Cancer* 59, 188 (1989).
- [75] DOIRON D.R. & GOMER C.J. *Porphyrim Localization and Treatment of Tumors*. Alan R. Liss, New York, (1984).
- [76] GILBERT A. & BAGGOTT J. *Essentials of Molecular Photochemistry*. Blackwell Science, Oxford, (1991).
- [77] CARRINGTON A. *Microwave Spectroscopy of Free Radicals*. Academic Press, New York, (1974).
- [78] WAYNE R.P. *Principles and applications of photochemistry*. Oxford University Press, Oxford, (1988).

- [79] JONES L.M., MAIR E.A., FITZPATRICK T.M., LYON R.D. & FEUERSTEIN I.M. Multidisciplinary airway stent team: a comprehensive approach and protocol for tracheobronchial stent treatment. *Ann. Otol. Rhinol. Laryngol.* 109, 889-898 (2000).
- [80] JAMIL B., ALGERMISSEN B., NOVAK W., KRINK A., MANGOLDT D., PHILIPP C., BERLIEN H.-P. Patient protection with sodium light following systemic photosensitizer application *The 15th World Congress of the International Society for Laser Surgery and Medicine [ISLSM] and 14th Annual Meeting of Deutsche Gesellschaft fuer Lasermedizin [DGLM eV]*, München (2003)
- [81] HECHT E. & ZAJAC A. *Optics*. Addison-Wesley, Wokingham, (1974).
- [82] HERZBERG G. *Atomic Spectra and Atomic Structure*. Dover, New York, (1944).
- [83] MERZBACHER E. *Quantum Mechanics*. Wiley, Chichester, (1970).
- [84] ATKINS P.M. *Molecular Quantum Mechanics*. Oxford University Press, Oxford, (1983).
- [85] CONDON E.V. & SHORTLEY G.H. *The Theory of Atomic Spectra*. Cambridge University Press, London, (1953).
- [86] COULSON C.A. & MCWEENEY R. *Coulson's Valence*. Oxford University Press, Oxford, (1979).
- [87] GERLOCH M. *Orbitals, Terms and States*. Wiley, Chichester, (1986).
- [88] MURRELL J.N., KETTLE S. & TEDDER J.M. *Valence Theory*. Wiley, London, (1965).
- [89] FLEMING L. *Frontier Orbitals and Organic Chemical Reactions*. Wiley-Interscience, Chichester, (1976).
- [90] RICHARDS W. & SCOTT P.R. *Structure and Spectra of Molecules*. Wiley, Chichester, (1985).
- [91] FOOTE C.S. *Singlet Oxygen*, in *Organic Chemistry*, H.H. Wasserman and R.W. Murray, Eds., Academic Press, New York, (1979).
- [92] KUHN H. & FÖRSTERLING H.-D. *Principles of Physical Chemistry*. Wiley, Chichester, (2000).
- [93] LÖFFLER G. *Funktionelle Biochemie*. Springer, Berlin, (1994).
- [94] KARLSON P., DOENECKE D. & KOOLMAN J. *Kurzes Lehrbuch der Biochemie*. Thieme, Stuttgart, (1994).
- [95] FOSSEY J., LEFORT D. & SORBA J. *Free Radicals in Organic Chemistry*. Wiley, (1995).

- [96] ELSTNER E.F. *Der Sauerstoff*. BI Wissenschaft, (1990).
- [97] KAVARNOS G.J. *Fundamentals of Photoinduced Electron Transfer*. VCH Publ. Inc., (1993).
- [98] GASSMAN P.G. *Photo-induced Electron Transfer Part C: Organic Substrates*. Elsevier, Amsterdam, (1988).
- [99] ALGERMISSEN ET AL. The detection of oxygen based radicals using electron spin resonance under PDT conditions. *Proc. of the 13th Intern. Cong. Laser* 237-242 (1997).
- [100] JAMIL B., ALGERMISSEN B., OSTERLOH K., PHILIPP C.M. & BERLIEN H.P. Qualitative differences in the generation of activated oxygen species by photosensitizers used in PDT. *Med. Laser Appl.* 17, 54 (2002).
- [101] AGARWAL R., ATHAR M., URBAN S.A., BICKERS D.R. & MUKHTAR H. Involvement of singlet oxygen in chloroaluminum phthalocyanine tetrasulfonate-mediated photoenhancement of lipid peroxidation in rat epidermal microsomes. *Cancer Lett.* 56, 125-129 (1991).
- [102] KAMAT J.P. & DEVASAGAYAM T.P. Oxidative damage to mitochondria in normal and cancer tissues, and its modulation. *Toxicology* 155, 73-82 (2000).
- [103] ZAIDI S.I. *et al.* Photodynamic effects of new silicon phthalocyanines: in vitro studies utilizing rat hepatic microsomes and human erythrocyte ghosts as model membrane sources. *Photochem. Photobiol.* 58, 204-210 (1993).
- [104] IWAMOTO Y. *et al.* Photodynamic DNA strand breaking activities of acridine compounds. *Biol. Pharm. Bull.* 16, 1244-1247 (1993).
- [105] NIEDRE M., PATTERSON M.S. & WILSON B.C. Direct near-infrared luminescence detection of singlet oxygen generated by photodynamic therapy in cells in vitro and tissues in vivo. *Photochem. Photobiol.* 75, 382-391 (2002).
- [106] PATTERSON M.S., MADSEN S.J. & WILSON B.C. Experimental tests of the feasibility of singlet oxygen luminescence monitoring in vivo during photodynamic therapy. *J. Photochem. Photobiol. B* 5, 69-84 (1990).
- [107] MULLER S. *et al.* Tetraamido-substituted 2,3-naphthalocyanine zinc(II) complexes as phototherapeutic agents: synthesis, comparative photochemical and photobiological studies. *J. Photochem. Photobiol. B* 35, 167-174 (1996).
- [108] WEISHAUPT K.R., GOMER C.J. & DOUGHERTY T.J. Identification of singlet oxygen as the cytotoxic agent in photoinactivation of a murine tumor. *Cancer Res.* 36, 2326-2329 (1976).
- [109] KORYTOWSKI W. & GIROTTI A.W. Singlet oxygen adducts of cholesterol: photogeneration and reductive turnover in membrane systems. *Photochem Photobiol* 70, 484-489 (1999).

- [110]GOTTFRIED V., PELED D., WINKELMAN J.W. & KIMEL S. Photosensitizers in organized media: singlet oxygen production and spectral properties. *Photochemistry and Photobiology* 48, 157-163 (1988).
- [111]FERNANDEZ J.M., BILGIN M.D. & GROSSWEINER L.I. Singlet oxygen generation by photodynamic agents. *J. Photochem. Photo,biol . B.* 37, 131-140 (1997).
- [112]ISMAIL M.S.Z.M. Untersuchungen zur Pharmakokinetik verschiedener Photosensibilisatoren für die Photodynamische Therapie. *Habilitationsschrift* (1996).
- [113]FRENCH A.P. & TAYLOR E.F. *Introduction to Quantum Physics.* Van Nostrand Reinhold, London, (1979).