

## References

- Andjelković, M., Camp, J.V., Meulenaer, B.D., Depaemelaere, G., Socaciu, C., Verloo, M. and Verhe, R. 2006. Iron-chelation properties of phenolic acids bearing catechol and galloyl groups. *Food Chem.* 98 : 23-31.
- Annaraj, J.P., Ponval, K.M. and Athappan, P.R. 2004. Synthesis, spectra and redox behavior of copper(II) complexes of curcumin diketimines as models for blue copper proteins. *Transit. Metal Chem.* 29 : 722-727.
- Ansari, M.J., Ahmad, S., Kohli, K., Ali, J. and Khar, R. K. 2005. Stability-indicating HPTLC determination of curcumin in bulk drug and pharmaceutical formulations. *J. Pharm. Biomed. Anal.* 39 : 132-138.
- Barik, A., Mishra, B., Kunwar, A., Shen, L., Mohan, H., Kadam, R.M., Dutta, S., Zhang, H.-Y. and Priyadarsini, K.I. 2005. Evaluation of a new copper(II)-curcumin complex as superoxide dismutase mimic and its free radical reactions. *Free Radic. Biol. Med.* 39 : 811-822.
- Barik, A., Mishra, B., Kunwar, A., Kadam, R.M., Shen, L., Dutta, S., Padhye, S., Satpati, A.K., Zhang, H.-Y. and Priyadarsini, K.I. 2007. Comparative study of copper(II)curcumin complexes as superoxide dismutase mimics and free radical scavengers. *Eur. J. Med. Chem.* 42 : 431-439.
- Beck, M.T. 1970. *Chemistry of complex equilibria*. translated by Chelmers, R. A. pp. 1-31. Hungary : Van nostrand reinhold.

- Benfu, W. and Hongying, Y. 1996. Study on the photometric determination of microamount of boron using curcumin. *Lihua Jianyan, Huaxue Fence* 32 : 236-237.
- Ben Best. 1990. *Chelation Therapy with EDTA*. (online) [5 August 2007] Available : <http://www.benbest.com/nutrceut/EDTA.html>.
- Bernabé-Pineda, M., Ramírez-Silva, M.T., Romero-Romo, M.A., González, E. and Rojas-Hernández, A. 2004. Spectrophotometric and electrochemical determination of the formation constants of the complexes curcumin-Fe(III)-water and curcumin-Fe(II)-water. *Spectrochim. Acta A*. 60 : 1105-1113.
- Bong, P.-H. 2000. Spectra and photophysicals of curcumin and curcuminoids. *Bull. Korean Chem. Soc.* 21 : 81-86.
- Borsari, M., Ferrari, E., Grandi, R. and Saladini, M. 2002. Curcuminoids as potential new iron-chelating agent : spectroscopic, polarographic and potentiometric study on their Fe(III) complexing ability. *Inorg. Chim. Acta*. 328 : 61-68.
- Bunyapraphatsara, N. 1992. *Thai medicinal plants*. pp. 130-138. Thailand: Prachachon.
- Chattopadhyay, I., Biswas, K., Bandyopadhyay, U. and Banerjee, R.K. 2004. Turmeric and curcumin: biological actions and medicinal applications. *Cur. Sci.* 87 : 44-53.

- Christian, G.D. and O'Reilly, J.E. 1986. *Ultraviolet and visible absorption spectroscopy in instrumental analysis* (2<sup>nd</sup> ed.), pp. 161-207, Allyn and Bacon, Boston.
- CNTC. 2005. *Hazardous metal bioavailability: A challenge for toxicology metal dispersion throughout the ecosystem*. (online) [15 December 2005] Available: <http://www.uoguelph.ca/cntc/publicat/publicat.shtml>
- Cotton, F.A. and Wilkinson, G. 1980. *Advanced inorganic chemistry* (4<sup>th</sup> ed.), pp. 107-194, John Wiley and Sons, New York.
- Daniel, S., Limson, J.L., Dairam, A., Watkins, G.M. and Daya, S. 2004. Through metal binding, curcumin protects against lead- and cadmium-induced lipid peroxidation in rat brain homogenates and against lead-induced tissue damage in rat brain. *J. Inorg. Biochem.* 98 : 266–275.
- Drago, R.S. *Physical methods in chemistry* (2<sup>nd</sup> ed.), pp. 92-95, Saunder College, Mexico.
- Dyrssen, D.W., Novikov Y.P. and Uppström, L.R. 1972. Studies on the chemistry of the determination of boron with curcumin. *Anal. Chim. Acta* 60 : 139-151.
- Hardy, J. K. 2000. The University of Akron. *UV-Visible spectroscopy*. (online) [20 November 2005] Available: <http://ull.chemistry.uakron.edu/analytical/index.html>.

- Haruki, A., Sumiaki, O. and Katsuyoshi, M. 1998. *Apparatus and process for treatment of boron-containing water*. pp. 6-7, Kokai Tokkyo Koho, Japan.
- Hynes, M.J. and O'Coinceanainn, M. 2004. The kinetics and mechanisms of reactions of iron(III) with caffeic acid, chlorogenic acid, sinapic acid, ferulic acid and naringin. *J. Inorg. Biochem.* 98 : 1457-1464.
- Jasim, F. and Ali, F. 1989. Measurements of some spectrophotometric parameters of curcumin in 12 polar and nonpolar organic solvents. *Microchem. J.* 39 : 156-159.
- Jayaprakasha, G.K., Jagan, L., Rao, M. and Sakariah, K.K. 2005. Chemistry and biological activities of *C. long*. *Trends Food Sci. Tech.* 16 : 533-548.
- John, V.D., Kuttan, G. and Krishnankutty, K. 2002. Anti-tumor studies of metal chelates of synthetic curcuminoids. *J. Exptl. Clinical Cancer Res.* 21 : 219-224.
- John, V.D. and Krishnankutty, K. 2005. Synthesis, characterization and antitumor activities of some synthetic curcuminoid analogues and their copper complexes. *Transit. Metal Chem.* 30 : 229-233.
- Jovanovic, S.V., Steenken, S., Boone, C.W. and Simic, M.G. 1999. H-Atom transfer is a preferred antioxidant mechanism of curcumin. *J. Am. Chem. Soc.* 121 : 9677-9681.

- Krishnankutty, K. and John, V. D. 2003. Synthesis, characterization, and antitumour studies of metal chelates of some synthetic curcuminoids. *Synth. React. Inorg. Met.-Org. Nano-Met. Chem.* 33 : 343-358.
- Kruse, J. 2003. *Curcumin und synthetische Derivate als umgebungssensitive*. Doctor. Faculty of Mathematics and Natural Sciences. Christian-Albrechts-University. Germany.
- Kühlwein, F., Polborn, K. and Beck, W. 1997. Transition metal complexes of curcumin and derivatives. *Z. anorg. allg. Chem.* 623 : 1211-1219.
- Kunihiro, W., Atsushi, S. and Masayuki, I. 2003. Spectrophotometry of boron in steels with curcumin by flow injection analysis. *Testsu to Hagane* 89 : 93-98.
- Lintvedt, R.L. and Kernitsky, L.K., 1970. Ligand field information from charge-transfer spectra of substituted tris(1,3-diketonato)iron(III) chelates. Spectrochemical series for 1,3-diketones. *Inorg. Chem.* 9 : 491-494.
- Nakamoto, K. 1986. *Infrared and Raman spectra of inorganic and coordination compounds*. pp. 259-357. John Wiley & Sons, New York.
- Park, S.-Y. and Kim, D.S.H.L. 2002. Discovery of Natural products from *Curcuma longa* that protect cell from beta-amyloid insult: a drug discovery effort against Alzheimer's Disease. *J. Nat. Prod.* 65 : 1227-1231.

- Pedersen, U., Rasmussen, P.B. and Lawesson, S.,-O. 1985. Synthesis of naturally occurring curcuminoids and related compounds. *Liebigs Ann. Chem.* 8 : 1557-1569.
- Perkampus, H. 1992. *UV-VIS spectroscopy and its applications*. translated from UV-VIS spektroskopie und ihre anwendungen by Grinter, H.G. and Threlfall, T.L. : Springer-Verlag Berlin Heidelberg, Germany.
- Plambeck. 1995. *Chemical sciences data table: stability constants of aqueous complex ions*. (online) [1 August 2007] Available : <http://www.ualberta.ca/~jplambec/che/data/p00408.htm>.
- Rao, A.S., Divakar, S. and Seshadri, R. 1988. Structure elucidation of product formation reaction of curcumin with boron trifluoride etherate. *Indian J. Chem.* 27B : 926-928.
- Roughley, P.J. and Whiting, D.A. 1973. Experiments in the biosynthesis of curcumin. *J. Chem. Soc., Perkin I* 20 : 2379-2388.
- Sharma, K.K., Chanda, S and Basu, D.K. 1987. Synthesis and antiarthritic study of a new orally active diferuloyl methane (curcumin) gold complex. *Inor. Chim. Acta* 135 : 47-48.
- Sharma, R.A., Gescher, A.J. and Steward, W.P. 2005. Curcumin: The story so far. *Eur. J. Cancer* 41 : 1955-1968.

- Shen, L., Zhang, H. and Ji, H-F. 2005. A theoretical study on Cu(II)-chelating properties of curcumin and its implications for curcumin as a multipotent agent to combat Alzheimer's disease. *J. Mol. Struct., Theochem.* 728 : 159-162.
- Shen, L. and Ji, H.-F. 2007. Theoretical study on physicochemical properties of curcumin. *Spectrochim. Acta A* 67 : 619-623.
- Stary, J. and Liljenzin, J. O. 1982. Critical evaluation of equilibrium constants involving acetylacetone and its metal chelates. *Pure & Appl. Chem.* 54 : 2557-2592.
- Sundaryono, A., Nourmamode, A., Gardrat, C., Fritsch, A. and Castellan, A. 2003. Synthesis and complexation properties of two new curcuminoid molecules bearing a diphenylmethane linkage. *J. Mole. Struct.* 649 : 177-190.
- Thompson, K.H., Böhmerle, K., Polishchuk, E., Martins, C., Toleikis, P., Tse, J., Yuen, V., McNeill, J.H. and Orvig, C. 2004. Complementary inhibition of synoviocyte, smooth muscle cell or mouse lymphoma cell proliferation by a vanadyl curcumin complex compared to curcumin alone. *J. Inorg. Biochem.* 98 : 2063-2070.
- Tønnesen, H.H. and Greenhill, J.V. 1992. Studies on curcumin and curcuminoids. XXII: curcumin as a reducing agent and as a radical scavenger. *Int. J. Pharm.* 87 : 79-87.

- Udo, R. and Lothar, M. 2004. Photometric determination of trace amounts of boron in glass and nitride based materials with curcumin-new approaches. *Glass sci. technol. (Offenbach, Germany)* 77 : 111-117.
- Univesity of Fribourg. 2005. *The formation of metal complexes*. (online) [1 October 2005] Available: <http://chimge.unil.ch/En/complexes/1cpx20.htm>
- Uppström, L. R. 1968. A modified method for determination of Boron with curcumin and a simplified water elimination procedure. *Anal. Chim. Acta* 43 : 475-486.
- Vajragupta, O., Boonchoong, P., Watanabe, H., Tohd, A. M., Kummasud, N., Sumanont, Y. 2003. Manganese complexes ao curcumin and derivatives: evaluation for the radical scavenging ability and neuroprotective activity. *Free rad. Bio. Med.* 35 :1632-1644
- Wang, Y.-J., Pan, M.H., Cheng, A.-L., Lin, L.-I., Ho, Y.-S., Hsieh, C.-Y. and Lin, J.-K. 1997. Stability of curcumin in buffer solutions and characterization of its degradation products. *J. Pharm. Biomed. Anal.* 15 : 1867-1876.
- Whitburn, J.S., Wilkinson, S.D. and Williams, D.R. 1999. Chemical speciation of ethylenediamine-N,N'-disuccinic acid (EDDS) and its metal complexes in solution. *Chem. Spec. Bioavail.* 11 : 85-97.
- Wright, J.S. 2002 Predicting the antioxidant activity of curcumin and curcuminoids. *J. Mol. Struct., Theochem.* 591 : 207-217.



- Zsila, F., Bika'di, Z. and Simonyi, M. 2003a. Molecular basis of the Cotton effects induced by the binding of curcumin to human serum albumin. *Tetrahedron: Asymmetry* 14 : 2433-2444.
- Zsila, F., Bika'di, Z. and Simonyi, M. 2003b. Unique, pH-dependent biphasic band shape of the visible circular dichroism of curcumin-serum albumin complex. *Biochem. Biophys. Res. Commun.* 301 : 776-782.
- Zsila, F., Bika'di, Z. and Simonyi, M. 2004. Induced circular dichroism spectra reveal binding of the antiinflammatory curcumin to human  $\alpha_1$ -acid glycoprotein. *Bioorg. Med. Chem.* 12 : 3239-3245.