As very few data are available on both the antioxidant activity and dose–dependent re– sponse, the.1 aim of this work was to evaluate not only the protective action of six natural purified chlorophyll derivatives (chlorophyll a and b, pheophytin a and b, pheophorbide a and b) but also the synthetic Cu– chloro– phyllin against lipid oxidation employing two methods: the bleaching of b–carotene in a water/linoleic acid emulsion and the scavenging of the stable radical 2,2–di– phenyl–1–picrylhydrazyl (DPPH).Ferruzzi, Bo hm, Courtney, and Schwartz (2002) provided information concerning in vitro antioxidant and antimutagenic activ– ities of water and lipid soluble chlorophyll derivatives as well as of metal chelated derivatives by free radical scav– enge and bacterial reverse mutagenesis assays, respec– tively.However, the same authors also reported that chlorophylls and pheophy– tins provide protection by preventing autoxidation of vegetable edible oils stored in the dark and suggested a hydrogen donating mechanism breaking the radical chain reactions.The antioxidant activities of the synthetic metallo–chlorophyll derivatives, especially Cu–chelated compounds were found to be much higher than those of natural chlorophylls and of Mg–free derivatives, which showed an almost insignificant antioxidant capac– ity.A research group in Japan (Endo, Usuki, & Kan– eda, 1985a, 1985b; Usuki, Endo, & Kaneda, 1984b; Usuki, Suzuki, Endo, & Kaneda, 1984) first suggested a pro–oxidant activity of chlorophylls under light, which could be understood as a transfer of the energy of singlet–excited chlorophyll to oxygen that would form reactive oxygen species.Hoshina, Tomita, and Shioi (1998) found that chloro– phylls were better antioxidants than their metal free derivatives and confirmed the .importance of the porphy– rin ring on the inhibition of lipid autoxidation