

Chemiluminescence detection of peroxy radicals and comparison of antioxidant activity of phenolic compounds

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The aim of this work was to examine the chemiluminescent (CL) method for quick comparison of antioxidant properties of new compounds and biological samples. 2,2'-Azobis-(2-amidinopropane)dihydrochloride (AAPH) was used as a source of free radicals and luminol to obtain high long lasting CL. The CL increased with the pH. Two exemplary compounds were compared: Trolox, a water soluble homologue of vitamin E and butylated hydroxytoluene (BHT), a commercially used antioxidant. Trolox quenched CL transiently but almost completely, and at the concentration about 100 times lower (10 nM) than BHT. The duration of quenching, called "the induction time" by other authors, was linearly related to Trolox concentration. On the contrary, BHT quenched CL only partially, depending on its concentration. In our experimental conditions 8.5 μ M BHT quenched 50% of CL. Relationships between structure and activity of the tested compounds are discussed.