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Rapid and Sensitive Method for Evaluation of Radical-Scavenging Activity Using Peroxyl Radicals Derived from 2,2'-Azobis(2-amidinopropane) Dihydrochloride Combined with Luminol Chemiluminescence

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A rapid and sensitive method for evaluation of the radical-scavenging activity, which uses 2,2'-azobis (2-amidinopropane) dihydrochloride (AAPH) as a radical generator in combination with a luminol chemiluminescence (CL) assay, was examined. The radical-scavenging activities of various analytical-grade compounds were measured by monitoring the decrease in CL. In this method (AAPH-CL), compounds that show lower CL values have stronger radical-scavenging activity. These results were compared to those measured using 1,1-diphenyl-2-picrylhydrazyl (DPPH)-colorimetry analysis. They were approximately similar in pattern ($r^2=0.6043$), although there were some discrepancies. The half-inhibition concentration (IC_{50}) values of 11 beverages were also evaluated using AAPH-CL and DPPH-high performance liquid chromatography methods. Data from the

two methods showed a correlation (r^2) of 0.4786. We conclude that the AAPH-CL method is suitable for the evaluation of radical-scavenging activity *in vitro*, with the advantages that it is rapid to carry out, has good sensitivity, is not affected by impurities or color in the solution, and bears some similarity to cellular processes.

Keywords: [radical-scavenging activity](#), [AAPH](#), [luminol](#), [chemiluminescence](#), [DPPH](#)

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