

**ABSTRACT****COMPARISON OF ANTIOXIDANT CAPACITIES OF NATURAL AND SYNTHETIC ANTIOXIDANT COMPOUNDS**

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In this work, *in vitro* antioxidant activity of various synthetic and natural antioxidant compounds were measured and compared using five different antioxidant activity methods. Butylated hydroxyanisole (BHA), butylated hydroxytoluene (BHT), ethoxyquin and propyl gallate were selected as representatives of synthetic antioxidants. The natural antioxidants were epicatechin, fisetin, flavone, gallic acid, kaempferol, caffeic acid, carnosol, chlorogenic acid, quercetin, luteolin, myricetin, naringenin, rutin, cinnamic acid, cyanidin chloride, taxifolin, Vitamin A, Vitamin C and Vitamin E. The antioxidant measurement methods used were Total Antioxidant Activity Assay by Ferric Thiocyanate Method (FTC), DPPH Radical Scavenging Activity Method, Reducing Power Assay, Trolox Equivalent Antioxidant Capacity Assay (TEAC) and Cupric Ion Reducing Antioxidant Capacity Assay (CUPRAC). Synthetic antioxidants followed BHT>BHA>ethoxyquin>propyl gallate order, natural antioxidants luteolin, quercetin, carnosol and Vitamin E showed similar activities when measured by FTC. In DPPH method ethoxyquin>propyl gallate>BHA>BHT showed activity orderly and for natural ones kaempferol, taxifolin, carnosol and Vitamin C were similar. In reducing power assay and TEAC, synthetic antioxidants followed the order propyl gallate>BHA>ethoxyquin>BHT and natural antioxidants fisetin, myricetin, gallic acid and quercetin were similar. By CUPRAC, propyl gallate>BHA>BHT>ethoxyquin and for natural ones fisetin, gallic acid, caffeic acid and luteolin activities were similar. In conclusion, judging from the high antioxidant capacities of natural antioxidants it can be said that luteolin, quercetin, carnosol, gallic acid and fisetin are good candidates as food preservatives and additives to be used in place of synthetic antioxidants.

**Key words:** Synthetic antioxidant, natural antioxidant, total antioxidant activity, DPPH, TEAC, CUPRAC, reducing power.