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### A photometric permanganate reduction assay for evaluating antioxidants

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**Abstract:** A photometric assay has been optimized for assaying antioxidants on the basis of their permanganate reducing activity (PRA), expressed as  $\mu\text{mole permanganate reduced } \mu\text{mole}^{-1}$  test agent. Incubating a standard mass of acidified potassium permanganate with varying masses of test antioxidant for 20 through 70 minutes causes a linear reduction in absorbance at 540 nm. The regression analysis of permanganate reduced for each mass of antioxidant provides PRA of the test agent in terms of its regression coefficient. The assay *per se* has been linear over 0.2 through 2  $\mu\text{mole permanganate}$  ( $b \pm se$ ,  $0.464 \pm 0.003$ , ca. 30 min;  $0.451 \pm 0.003$ , ca. 60 min) with improved regression over 0.2 through 1  $\mu\text{mole}$  correspondingly as,  $0.471 \pm 0.004$  and  $0.461 \pm 0.007$ ; ( $r^2 = 0.999$ ,  $n=6$ ) showing overall mean COV 1.5 per cent. The assay has been employed to evaluate flavonoids, phenolics, organic acids including ascorbic acid, sulfur-containing compounds, curcumin, DMSO, glucose, sucrose, mannitol, and water soluble solvents viz., ethanol, methanol and acetone for their PRA. The assay provides an inexpensive, simple tool to screen test agents for their antioxidant activity.

**Key words:** Permanganate reduction, Antioxidants, Flavonoids, Phenolics, Ascorbic acid, Curcumin.

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