

Assessment of antioxidant potential of the freeze-dried and spray-dried forms of *Amurthashtaka kwatha*

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The antioxidant potential of medicinal plants is attributed to diverse phytoconstituents that mitigate oxidative stress, supporting disease management and health maintenance. *Amurthashtaka kwatha* is an ayurvedic polyherbal decoction composed of eight medicinal plants. This study aimed to evaluate antioxidant potential of freeze dried and spray dried powders of *Amurthashtaka kwatha* using the 2,2-diphenyl-1-picrylhydrazyl (DPPH), 2,2'-azinobis (3-ethylbenzthiazoline-6-sulphonic acid (ABTS) and ferric reducing antioxidant power (FRAP) methods. In both DPPH and ABTS assays, the half maximal inhibitory concentration (IC₅₀) was calculated, whereas in the FRAP assay, the concentration required to achieve target absorbance 0.5 was determined. Ascorbic acid, Trolox, and ferrous sulphate were used as respective positive controls. The IC₅₀ value of standard ascorbic acid and Trolox in DPPH assay were 9.927±0.63 µg/mL and 10.36±0.92 µg/mL respectively, while those for the freeze-dried and spray-dried powders were 128.70±0.55 µg/mL and 167.60±0.90 µg/mL (p<0.05) respectively. In the ABTS assay, the IC₅₀ values of ascorbic acid and Trolox were 6.93±0.25 µg/mL and 61.75±0.80 µg/mL, while the freeze-dried and spray-dried powders recorded 248.50±0.95 µg/mL and 281.50±0.81 µg/mL respectively (p<0.05). In the FRAP assay, the concentrations required to achieve an absorbance of 0.5 were 610.80±0.63 µg/mL for ferrous sulphate, 98.81±0.82 µg/mL for ascorbic acid, and 156.79±0.05 µg/mL for Trolox, whereas freeze-dried and spray-dried powders required 1393.33±0.42 µg/mL and 1450.87±0.52 µg/mL, respectively (p<0.05). *Amurthashtaka kwatha* demonstrated notable *in vitro* antioxidant activity, with the freeze-dried extract exhibiting greater effectiveness. Though less potent than that of standard antioxidants, the findings validate its traditional use and indicate its promise as a supportive natural antioxidant source.

Keywords: *Amurthashtaka kwatha*, Ayurveda, Freeze dry, Spray dry, Half maximal inhibitory