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### ***In vitro* antioxidant activities Tamalakyadi decoction (polyherbal formulation used in Ayurveda) and its modified preparation forms**

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Tamalakyadi decoction (TD) is a classical formulation used in the Sri Lankan traditional system of medicine for asthma, cough, and allergic rhinitis. It consists of 12 plant ingredients. This decoction was modified to an instant dissolving powder form, because the decoction has a shorter shelf life, and preparing fresh decoction every time it is needed is inconvenient. The objective of the present study was to compare the *invitro* antioxidant potentials of TD with its modified dosage forms as freeze dried, spray dried and ghanasara forms. Initially 4 samples of TD were prepared according to the traditional decoction preparation method. Five grams was taken from each ingredient of the formulation and boiled with 1920 ml of water under mild flame to reduce the volume up to 240 ml. The same procedure was repeated 4 times and the pooled decoction (240 ml ×4) was divided equally into four portions, and 3 samples were converted into freeze dried, spray dried and Ghanasara forms. The antioxidant activities of these four preparations were assessed by using DPPH free radical scavenging activity, ferric reducing antioxidant power (FRAP), total polyphenol content (TPC) and total flavonoid content (TFC). Antioxidant activities such as DPPH, FRAP, TPC and TFC were higher in the decoction [ $8.2 \pm 0.1 \mu\text{g/mL}$ ,  $572.5 \pm 2.3 \text{ mg TE/g}$  (Trolox Equivalents/g) of extract,  $206.0 \pm 2.3 \text{ mg GAE/g}$  (Gallic Acid Equivalents/g) of extract,  $8.2 \pm 0.5 \text{ mg QE/g}$  (Quercetin Equivalents/g) of extract] and freeze dried preparation ( $10.6 \pm 0.3 \mu\text{g/mL}$ ,  $634.2 \pm 1.3 \text{ mg TE/g}$  of extract,  $148.2 \pm 0.7 \text{ mg GAE/g}$  of extract,  $6.2 \pm 0.3 \text{ mg QE/g}$  of extract) than in spray dried ( $20.8 \pm 0.3 \mu\text{g/mL}$ ,  $154.8 \pm 1.9 \text{ mg TE/g}$  of extract,  $63.8 \pm 2.0 \text{ mg GAE/g}$  of extract,  $2.9 \pm 0.1 \text{ mg QE/g}$  of extract) and ghanasara preparation ( $17.9 \pm 0.6 \mu\text{g/mL}$ ,  $222.4 \pm 1.0 \text{ mg TE/g}$  of extract,  $69.5 \pm 0.4 \text{ mg GAE/g}$  of extract,  $2.9 \pm 0.1 \text{ mg QE/g}$  of extract). In conclusion, Tamalakyadi decoction which was prepared according to the traditional method, showed higher antioxidant potentials than its modified dosage forms. Among the modified dosage forms, the freeze dried preparation had higher antioxidant power than spray dried and ghanasara preparations.

**Key words:** Tamalakyadi decoction, freeze dried, spray dried.

**Acknowledgement:** Financial assistance by UGC Research grant UGC/VCDRIC/PG2016(II)/IIM/02

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