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Effect of Storage Temperature on the Phenolic Content and Antioxidant Capacity of "*Phyllanthus emblica*" Fruits

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Phyllanthus emblica is well-known for its rich vitamin C (Ascorbic acid) and poly phenol contents. Numerous studies have indicated that herbal Medicines rich in antioxidant properties provide protection against oxidative stress induced diseases and disorders. Hence this study was initiated to evaluate the Total Phenol Content (TPC) and Antioxidant Activity of aqueous extracts of *Phyllanthus emblica* fruits. Fruits were dried to constant weight, powdered and sieved. TPC was estimated by using Folin-Ciocalteu reagent and Total Antioxidant Content (TAC) with Ferric Reduction method. Initially the TPC of the cold water and hot water extracts of *P. emblica* fruit powder were 186.5 and 198.4 ($\mu\text{g TAE/g dry weight}$), in respectively. Hot aqueous extract contained higher TPCs than its cold aqueous extracts. TPC of cold and hot extracts were 164.65 (± 19.01) and 172.25 (± 20.35) $\mu\text{g TAE/g dry weight}$ respectively. When the powder of *P. emblica* was stored at room temperature (27-32°C) for six month, the TPCs were 169.27 \pm (14.05) and 178.5 (± 14.83) $\mu\text{g TAE/g dry weight}$ respectively and when they were stored at 4°C, for six month. Based on the Ferric Reducing power assay. TAC in the cold and hot extracts of *Phyllanthus emblica* fruit powder was 58.62 (± 9.4) and 50.28 (± 14.4) $\mu\text{g/ml}$ respectively when stored at room temperature and 58.51 (± 8.1) and 49.4 (± 6.9) $\mu\text{g/ml}$ when stored at 4°C. When the hot extracts of *Phyllanthus emblica* fruit powder contained higher antioxidant activity (lower EC50 i.e. the reverse order of antioxidant activity value 50.28 \pm 14.4) than cold extracts (Highest EC50 value 58.62 \pm 9.4) at room temperature and hot extracts contained higher antioxidant activity (lower EC50 value 49.4 \pm 6.9) than the cold extracts at 4°C (Highest EC50 value 58.51 \pm 8.1). Antioxidant activity was higher in the powder preparations when stored at 4°C than those stored at Room temperature. Antioxidant activity decreased with the storage. While the loss was more when stored at room temperature. In Siddha Medicines, the lifespan of the 'chooranam' is 3 month. Hence this study shows that the *Phyllanthus emblica* fruit powder should be used within 3 month.

Key words: Antioxidant Activity; Ferric Reducing Power Assay; *Phyllanthus emblica*; Siddha Medicine; Total Phenolic Content.