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Comparison of Growth Parameters, Bioactive Compounds and Antioxidant Capacity of Two *Pogostemon* Species under Two Different Growing Systems

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Abstract

Pogostemon heyneanus Benth. and *Pogostemon cablin* (Blanco) Benth. are two industrially important medicinal plants belonging to family Lamiaceae. The essential oil extracted from the leaves is used to give a basic and long-lasting feature to fragrances in the manufacturing of cosmetics and soaps and as a natural additive in foods for human consumption. Even though both *P heyneanus* and *P. cablin* are commercially cultivated in other countries, information on phytochemical and bioactivity of Sri Lankan grown *Pogostemon* species are scarese. Present study was undertaken to compare *P. heyneanus* and *P. cablin* grown in two different growing systems (i.e. field grown and hydroponically grown) by means of the growth, bioactive compounds and biological activities. Total antioxidant capacity (TAC) and total phenolic content (TPC) were determined by ferric reducing antioxidant power (FRAP) assay and colorimetric Folin-Ciocalteu method respectively. Plant height (cm), canopy spread (cm), number of leaves and number of branches were also determined as growth parameters. Both the plant species grown under field conditions performed higher plant height, number of leaves, canopy spread and number of branches compared to the hydroponic conditions. Significantly higher TAC and TPC contents were observed in field grown plants of both *P. heyneanus* and *P. cablin* compared to hydroponically grown plants. The higher contents of TAC and TPC reported in leaves of *P. cablin* compared to *P. heyneanus*. Moreover, the highest TAC and TPC were reported in leaves and followed by stems and roots. The order of increase of TAC and TPC in both species was roots < stems < leaves. According to the results of this study, it is evident that leaves of *P. cablin* grown in the field possess higher content of secondary metabolites and bioactivities.

***Keywords*:** Antioxidant capacity, Growing systems, Phenolics, *Pogostemon cablin*, *Pogostemon heyneanus*