

**PHYSICAL, CHEMICAL AND MORPHOLOGICAL  
CHARACTERIZATION OF SRI LANKAN ORIGIN DRIED CLOVE  
(*Syzygium aromaticum* L.) BUDS**

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Superior quality of Sri Lankan clove (*Syzygium aromaticum* L.) is due to the presence of unique chemical constituents. The quality of local clove can be reduced due to the adulterations done in exportation. Hence distinguishing the local origin clove using specific characteristics is important. Present study identified chemical (volatile oil, total ash, acid insoluble ash, total flavonoid, total alkaloid), physical (bulk density, length from end of pedicel to bud, handpicked clove%, colour) and morphological properties (microscopic features) of local dried clove buds. Fresh, mature clove buds were collected from 15 locations covering *Matale* (4 locations), *Kandy* (4 locations), *Kegalle* (5 locations), and *Matara* (2 locations). They were sun dried for 4-5 days. Performed ANOVA followed by Tukey's test and cluster analysis. The highest values for length, bulk density, handpicked clove%, were recorded as  $1.55 \pm 0.15$  cm,  $458 \pm 7.31$  kgm<sup>-3</sup>,  $79.6 \pm 1.88$  %, respectively. The highest length and bulk density of clove were recorded from *Matale* district. The highest percentages of clove volatile oil, total ash, acid insoluble ash was recorded from *Kegalle* district and they were  $33.65 \pm 0.71$ ,  $7.96 \pm 0.32$ ,  $0.22 \pm 0.00$ , respectively. The highest values for flavonoid ( $26.76 \pm 0.07$  Quercetin mgg<sup>-1</sup>) and alkaloid ( $0.66 \pm 0.01$  mg of atropineg<sup>-1</sup>) contents were in cloves collected from *Kandy* district. Clove from *Matale*, *Kandy*, *Matara* were bright red in colour while it was middle range of yellow-red in *Kegalle* as per the Munsell colour chart. Cluster analysis revealed that all samples can be classified into cluster 1 (*Matale*, *Kandy*), cluster 2 (*Kegalle*), cluster 3 (*Matara*). Cloves of *Matale*, *Kandy* and *Kegalle* districts showed a characteristic "dumbbell shape", while clove in *Matara* district had no specific shape. The identified physical, chemical and morphological features may be useful to develop a key to identify Sri Lankan origin clove buds.

**Keywords:** Cluster analysis, Chemical characters, Morphological characters, Sri Lankan clove