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A Comparative analysis of *Hinguashtaka Churna* in marketed samples

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Ayurveda medicines are used extensively worldwide. Standardization of herbal formulations is essential in order to assess the quality of drugs for therapeutic value. *Hinguashtaka Churna* is a poly-herbal Ayurvedic powder presently used for dyspepsia, flatulence and gastritis with ghee or warm water.

The objective of this study was to standardize *Hinguashtaka Churna* to assess the quality of the drug based on the parameters of the World Health Organization guidelines. Various parameters including organoleptic characteristics, physiochemical characteristic (loss on drying, total ash, acid insoluble ash, water soluble ash) and physical characteristics (bulk density, tapped density, compressibility index, Hausner ratio, angle of repose, pH value) of four different brands (A, B, C, D) were compared with an in-house preparation (E) of *Hinguashtaka churna*. Plant materials for the in-house preparation were identified, authenticated according to the formulation given in the Sri Lankan Ayurveda Pharmacopeia.

The results are given in the brand order of A, B, C, D and E. The organoleptic characteristics revealed that all samples were bitter in taste with a characteristic odor and were dark brown, pale brown, yellowish brown, dark brown and blackish brown in colour respectively. The percentage ash values were 23.37 ± 0.25 , 21.5 ± 0.10 , 17.25 ± 0.25 , 21.5 ± 0.25 , 18.25 ± 0.01 (total ash % w/w), 1.75 ± 0.50 , 1.25 ± 0.01 , 0.75 ± 0.50 , 0.10 ± 0.08 , 0.03 ± 0.01 (acid insoluble ash % w/w) and 5.25 ± 0.25 , 4.75 ± 0.25 , 4.25 ± 0.01 , 4.00 ± 0.50 , 3.75 ± 0.25 (water soluble ash % w/w). Percentages of loss on drying (% w/w) were 10.60 ± 2.40 , 9.59 ± 0.41 , 12.00 ± 0.80 , 11.60 ± 2.40 , 14.80 ± 2.59 . The bulk density (g/cm^3) and tapped density (g/cm^3) of the above samples in the same order were 0.333 ± 0.01 , 0.333 ± 0.01 , 0.294 ± 0.01 , 0.333 ± 0.01 , 0.344 ± 0.01 and 0.526 ± 0.01 , 0.555 ± 0.01 , 0.454 ± 0.01 , 0.555 ± 0.01 , 0.588 ± 0.01 respectively. The compressibility index percentages and Hausner ratios of the samples were 36.72 ± 1.00 , 40.00 ± 1.00 , 35.31 ± 1.00 , 40.00 ± 1.00 , 41.49 ± 1.00 and 1.666 ± 0.01 , 1.580 ± 0.01 , 1.545 ± 0.01 , 1.580 ± 0.01 , 1.709 ± 0.01 respectively. The values for angle of repose were 44.29 ± 0.69 , 44.29 ± 1.37 , 45.72 ± 0.37 , 44.11 ± 0.17 , 46.84 ± 0.58 . The pH values were 5.29 ± 0.01 , 5.54 ± 0.01 , 5.79 ± 0.01 , 5.42 ± 0.01 , 5.75 ± 0.01 (1% solution) and 5.04 ± 0.01 , 5.38 ± 0.01 , 5.47 ± 0.01 , 5.18 ± 0.01 and 5.59 ± 0.01 (10% solution).

The results revealed a slight deviation in marketed samples from the in-house preparation indicating variations in preparation from the Pharmacopeia standard. Standards based on in-house preparation of this poly herbal formulation have ascertained purity, quality and safety. The results could be considered as tools for manufacturing standards of *Hinguashtaka Churna* with high efficacy. Further studies using chromatographic techniques should be carried out to investigate the purity and quality of *Hinguashtaka churna*.