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Kaluduru Tippili Leha: Physicochemical and phytochemical screening of traditional herbal Linctus on dysarthria after ischemic stroke

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Background: Kaluduru Tippili Leha is a Sri Lankan traditional herbal linctus which is given for dysarthria after ischemic stroke for many years. It has *Nigella sativa L*, *Piper longum L*, Bees honey, and fresh juice of *Punica granatum L*. seeds. Phytochemicals and therapeutic properties in plants occur through differences in growth, geographical location, and time of harvesting. Therefore, standardization is necessary to maintain batch wise consistency of a plant-based drug.

Objective: To standardize Kaluduru Tippili Leha using standard protocols.

Method: All the plants materials were collected from the Western Province, Sri Lanka while bees honey was collected from Uva Province, Sri Lanka. Physicochemical parameters such as moisture content, total ash, water soluble ash, acid insoluble ash, and extractable values were determined according to World Health Organization (WHO) guidelines. Thin Layer Chromatography (TLC) fingerprints were developed for hexane, dichloromethane, and ethyl acetate fractions of Kaluduru Tippili Leha using suitable mobile phases. In addition, phytochemical screening, microbial counts, and heavy metal (Hg, As, Cd, Pb) levels were investigated for the drug.

Results: Physicochemical parameters showed that herbal formulation contained 44.5±0.6% of moisture, 2.3±0.1% total ash, 1.8±0.1% of water-soluble ash, and less than 0.01% of acid insoluble ash. Extractive values of cold water and hot water were 48.5 ±2.2% and 55.9±0.2% respectively. The phytochemical screening reflects existence of alkaloids, saponins, steroids, terpenoids, flavonoids, phenols, tannins, cardiac glycosides which may be responsible for their therapeutic effects. TLC fingerprint profiles of hexane, dichloromethane and ethyl acetate fractions showed the differences of phytochemicals present in each fraction in terms of R_f values. Tested heavy metals and microbes such as *Escherichia coli*, *Salmonella*, *Staphylococcus aureus* and total coliforms were not present in the drug.

Conclusion: The results obtained in the present study indicated that these parameters can be used as reference standard for Kaluduru Tippili Leha.