Development and standardization of *Parijata* (*Nyctanthes arbortristis* L.) flower based novel herbal tea as a potential functional beverage for diabetes mellitus (*Madhumeha*)

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Diabetes mellitus is a common, impactful, non-communicable disease with increasing global prevalence. The objective of this research was to develop and standardize *Parijata* flower-based novel herbal tea as a potential functional beverage for diabetes mellitus. After extensive literature study and tea tasting, the herbal tea blend was developed as 40% *Parijata* (*Nyctanthes arbor-tristis* L.) flowers, 30% *Bilva* (*Aegle marmelos* (L.) Corrêa) flowers and 30% green tea (*Camellia sinensis* (L.) Kuntze), based on experimental optimization. All the above ingredients facilitate anti-diabetic action, as per classical Ayurvedic texts or modern scientific research. Ingredients were collected, authenticated and systematically processed using the cut and dry method to manufacture herbal tea sachet packets of 2.5 grams each, with appropriate packaging and labeling. Standardization of the final product was conducted in triplicate with organoleptic, physicochemical and phytochemical assays and chromatographic profiles, following WHO guidelines. The herbal tea brew is of golden-brown color, aromatic odor, mild bitter & astringent taste and soft texture. The physicochemical parameters: pH, moisture content and ash values were within acceptable ranges. Phytochemical analysis of aqueous extract revealed the presence of alkaloids, phenols, tannins, flavonoids, terpenoids, cardiac glycosides and saponins suggesting potential health benefits including anti-diabetic activity, while proteins and lipids were absent. The HPTLC fingerprint exhibited four characteristic peaks, indicating the presence of four active ingredients. Total phenolic content of 247 mg GAE/g, total flavonoid content of 35.62 mg QE/g and total tannin content of 76.6 mg TAE/g validate the anti-oxidant properties of the final product. In conclusion, these parameters can be used as benchmarking standards for this novel product and the herbal tea can be hypothesized to be a potential functional beverage for diabetes mellitus.

Keywords: *Diabetes mellitus, Functional beverage, Herbal tea, Madhumeha, Parijata*