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Evaluation of Synergistic Gastroprotective Activity of *Desmodium triflorum* Linn. and *Pogostemon heyneanus* Benth. Using *In-Vitro* Methods

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Desmodium triflorum Linn. and *Pogostemon heyneanus* Benth. are common terrestrial plants found in tropical countries. The gastroprotective activities of these individual plants have been investigated separately in previous studies. This study aimed to evaluate the synergistic *in-vitro* gastroprotective activity of 'combinations' of aqueous extracts (AEs) of *D. triflorum* whole plant and *P. heyneanus* leaves. AEs of the plants were prepared by refluxing. Thin layer chromatograms for individual plant extracts and combined extracts were obtained after solvent-extracting the AE with dichloromethane. Gastroprotective activities of different combination ratios of the combined extract and the large and small molecular fractions (10000 Da molecular weight cut-off) of the best combination were evaluated *in-vitro*. A commercially available antacid formulation was used as the positive control, whereas distilled water was used as the negative control. Thin Layer Chromatograms of different combinations of AEs resulted in dissimilar profiles due to the spots with dissimilar Rf values. Different ratios of the combined AEs and, both small (<10000 Da MWC) and large molecular fractions exerted significant ($p<0.05$) gastroprotection compared to the negative control, based on *in-vitro* assays of; acid-neutralising effect, neutralising capacity by Fordtran's method and duration of consistent neutralisation by Vatier's artificial stomach (modified) model. The combination ratio of 3:1 (*D. triflorum*: *P. heyneanus*) demonstrated the best activity with acid-neutralising effect assay (4.94±0.00 end pH) and duration of consistent neutralisation (403.43±4.63 s), whereas the positive control resulted in 6.51 ± 0.01 end pH and 450.78 ± 2.87 s in respective assays. Hence, the study concludes that combined AE of *D. triflorum* whole plant and *P. heyneanus* leaves exhibit synergistic gastroprotection where the molecules with different molecular weights are responsible for the activity.

Keywords: *Desmodium triflorum, Pogostemon heyneanus, gastroprotective, neutralisation*