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Screening for cyclotides and antibacterial studies for selected medicinal plants of families Fabaceae, Violaceae and Curcurbitaceae.

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The Sri Lankan Ayurvedic system of traditional medicine derives from plant-based remedies handed down from generation to generation over a period of 3000 years. Cyclotides, gene encoded proteins, are exceptionally stable, and have a wide range of biological activities such as antimicrobial, anti-HIV, antineurotensin, cytotoxic and hemolytic activities. The current project was conducted to screen for cyclotides and antibacterial studies of selected Sri Lankan medicinal plants belong to families Fabaceae, Cucurbitaceae, and Violaceae. The plants were chosen based on their ethno pharmacology values. Collected plant parts were pulverized and extracted to Dichloromethane and Methanol 1:1 (v/v) mixture. This total crude extract was then subjected to agar disc diffusion assay in order to find the antibacterial active extracts. Also all crude extracts were subjected to solvent-solvent extraction. From this, organic and aqueous crude extracts were obtained. The aqueous extract was subjected to cyclotide screening by carrying out liquid chromatography-mass spectrometry (LC-MS) analysis. Cyclotides were detected by their late retention times on reverse phase high-performance liquid chromatography (RP-HPLC) and molecular masses between 2.8 and 3.8 kDa. Fabaceae(27), Cucurbitaceae (4), and Violaceae (4) plants were screened using the above method. Out of all plants screened only two plants in the Violaceae family,*Viola pilosa* and *Viola beneticifolia* showed the presence of cyclotides. According to our knowledge this is the first reporting of cyclotides in Sri Lankan plants. Further experiments were conducted to check the antibacterial activity of those plants. 13 plants out of 35 showed antibacterial activity against *Staphylococcus aureus* and *Bacillus cereus* in the agar disc diffusion assay. Interestingly, all of the plants in the assay showed activity against gram positive strains, and none of the plants showed activity against gram negative strains (*Escherichia coli* and *Pseudomonas aeruginosa*were tested).

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