



Characterization of phytopharmaceuticals from fresh and dried sprouts of *Macrotyloma uniflorum* (Lam.) Verdc.

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Abstract: Dietary supplements from different plant sources and plant products are referred to as 'Phytopharmaceuticals'. These are mainly produced from different parts of the plants either in fresh or dried forms. Currently, natural products are well recognized in the pharmaceutical industry for their broad significant pharmacological activities. Bioactive natural products often occur as a part of a family of related molecules which is of great value to isolate a number of homologues and obtain structure-activity information. One such effective natural product from plant source are sprouts which contain essential bioactive components with less anti-nutritional factor especially phytic acid that can lead to the improvement of the food technologies and to healthy nutrition supplements. The present study was carried out to analyse the phytoconstituents present in fresh and dried sprouts of *Macrotyloma uniflorum* (Lam.) Verdc. (Horse gram). Screening the bioconstituents through preliminary qualitative phytochemical tests and quantification of the primary and secondary constituents were carried out in fresh aqueous and methanol extracts. The characterization of the phytoconstituents were analysed through FTIR. Specific bioactive compounds were identified through GC-MS studies. Antibacterial activity of the horse gram sprouts against several human pathogens like *Staphylococcus aureus*, *Escherichia coli*, *Salmonella typhi*, *Klebsiella pneumoniae* and *Shigella flexneri* were studied. Maximum zone of inhibition were shown by *Shigella flexneri*, *Salmonella typhi* and *Klebsiella pneumoniae*. *In-vitro* antioxidant and anti-inflammatory studies proved the presence of 'Phytopharmaceuticals' such as terpenoids, proteins, carbohydrates, fatty acids and vitamins. Through *insilico* analysis, docking studies were performed to confirm the functional role of the specific phytopharmaceuticals. Thus, the fresh and dried horse gram sprouts are enriched with the significant phytopharmaceuticals which can be recommended as a good source of natural therapeutic agents.

Keywords: Horse gram sprouts, phytopharmaceuticals, antibacterial, antioxidant, anti-inflammatory, *insilico* analysis.

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