

(54) Title of the invention : INTEGRATED GREEN ANALYTICAL APPROACH FOR PHYTOCHEMICAL PROFILING AND STRUCTURAL CHARACTERIZATION OF SELECTED PLANT EXTRACTS

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(57) Abstract :

The present invention discloses a green solvent-based integrated process for extraction, phytochemical profiling and structural characterization of antioxidant-rich plant compositions derived from Dill leaves (*Anethum graveolens* L.), Onion peel (*Allium cepa* L.), Brahmi leaves (*Centella asiatica*), and Spinach leaves (*Spinacia oleracea* L.). The integrated green analytical process for obtaining an antioxidant-rich plant composition, comprising: preparing plant powder from selected plant materials; extracting the powder using a solvent system comprising lactic acid, acetic acid and distilled water; subjecting the extraction mixture to microwave-assisted extraction; filtering the extract; and evaporating the filtrate at low temperature to obtain a phytochemical-rich composition; wherein the solvent system comprises 1% lactic acid solution, 1% acetic acid solution and distilled water; wherein microwave-assisted extraction is carried out for approximately 1 hour 30 minutes; wherein evaporation is carried out at approximately 40°C. The obtained composition is characterized by the presence of flavonoids, phenolics, terpenoids and glycosides and is subjected to qualitative, quantitative and spectroscopic analysis. The process and composition of the present invention is to demonstrate a responsible framework for plant extract characterization. The invention provides a sustainable, efficient and environmentally benign framework suitable for pharmaceutical, nutraceutical and functional food applications.

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