



Department of
Environmental
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1st DIFENEW INTERNATIONAL STUDENT CONFERENCE

ABSTRACT BOOK

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COMPARISON OF CONVENTIONAL AND NOVEL EXTRACTION TECHNIQUES OF PHENOLIC COMPOUNDS FROM PLANTS

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Abstract: Phenolic compounds are the most common secondary metabolites in vascular plants with enormous structural diversities. Many phenolic compounds occur constitutively and determine the basic life processes of plants, but some stress factors contribute to increases in or *de novo* synthesis of phenolics, such as infection, plant tissue damage, UV radiation and elevated temperature. The interest in the extraction of phenolic compounds has been growing, due to their importance and possible positive effect on human health. Also, determination of phenolic compounds can be very helpful in estimation of pharmacological activity of medicinal plants. The recovery of these phenolic compounds from plants is mainly dependent on the method of extraction. The most utilized conventional methods are *maceration*, *decoction*, *percolation*, *infusion*, *digestion*, *serial exhaustive extraction (SEE)*, and *solid-liquid extraction (SLE)* or *Soxhlet extraction*. These methods are mostly designated by utilizing larger volume of extraction solvents and manual procedures that are labor-intensive and mostly dependent on the investigator. Prolonged exposure to high temperatures during conventional solvent extraction may cause degradation of the phenolic compounds in plant cells and thus reduce the maximum recovery yields of the compounds. According to some studies, greener novel extraction methods have been generated with the purpose of filling the missing gaps of conventional methods. Novel extraction technologies like *accelerated solvent extraction (ASE)*, *ultrasound-assisted extraction (UAE)*, *supercritical fluid extraction (SFE)*, *microwave-assisted extraction (MAE)*, *shock wave-assisted extraction*, *pressurized liquid extraction (PLE)*, *supercritical CO₂ extraction (SC-CO₂)*, and *enzyme-assisted extraction (EAE)* are getting more attention because of their shorter time and lower energy consumption, and higher extraction efficiency. These methods are also known to be environmentally friendly since they use smaller volumes of extraction solvents. The demand for new bioactive compounds will continue to encourage the search for innovative extraction techniques to achieve appreciable recovery yields from the plant materials.

Keywords: *Phenolic compounds; Conventional extraction methods; Novel extraction methods.*

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