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Research Abstract

## Pharmacological Evaluation of Three Commercial Echinacea Extracts

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**Abstract:** Echinacea is one of the plants used to treat different illnesses since prehispanic times thanks to its pharmacological properties. Actually, Echinacea is sold in different forms, such as hydroalcoholic extracts and used for its antioxidant properties. These extracts are being prepared in standardized manufacturing conditions, guaranteeing the quality of the biological material but they lack any kind of chemical assessment that allows the standardization of the extract. This chemical assessment is based on the determination of the major chemical groups, obtaining fingerprints, quantification of some of the metabolites and pharmacological effect in animals. We used three commercial Echinacea extracts: Echinacea®, Super Echinacea® and Echinacea Supreme®. Test tube reactions were carried out to determine the presence of tannins, coumarins, saponins, anthraquinones and alkaloids, qualitatively. Antioxidant activity was determined using the DPPH and ABTS method. We found tannins and coumarins in Echinacea® and Super Echinacea®; anthraquinones in Super Echinacea® and Echinacea Supreme®; saponins in the three commercial extracts but no alkaloid presence. The chemical group differences may have an impact on the pharmacological effect. The pharmacological and chemical results showed significant differences, however in the clinical use, the manufacturers recommend using the same dose in the different extracts.

**Keywords:** Echinacea, standardization, metabolites, antioxidants

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