

Phytochemistry and phytoconstituents of herbal drugs and formulations

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Indian civilization has played a pioneer role from the time immemorial in utilizing the plants such as indigenous drugs. Ethnomedicinal therapy plays a vital role in the primary healthcare of tribal and rural populations and hold great potential in the discovery of new drugs.

The efficacy of traditional herbal has proven over the long decades, but the mode of action is even more complex than mechanistic clarification of a single bioactive factor because of unfractionated or partly fractionated extracts and often mixtures of different constituents are used. The insufficient and unacceptable evidences of safety, efficacy, standardization and inconsistent production practices are a major concern. Evaluation and isolation of these mixtures of the active constituent is a challenging task, moreover the safety of consuming certain herbs are also questionable. On the increasing trend in the use of herbal preparations as remedies for major diseases, there is also a growing concern about their efficacy, safety and control. This prompted the WHO to come out with recommendations for control in the documents "Research Guidelines for Evaluating the Safety and Efficacy of Herbal Medicines" in 1993.

Herbal remedies are complex mixture of many herbs which may sometime produce synergistic effect with each other resulting in the increased therapeutic potential of remedy. The identification of biologically active compound responsible for medicinal property alone and in combination is an essential requirement for quality control and dose determination of plant based drugs. Therapeutic activity of a herbal formulation depends on its phytochemical constituents. Correct identification and quality assurance is an essential prerequisite to ensure reproducible quality of herbal medicine, which contributes to its safety and efficacy.

Complete phytochemical investigation of the medicinally important plants should be carried out, as this would be beneficial in standardization and dose determination of herbal drugs. The process of standardization can be achieved by stepwise pharmacognostical, phyto- and physico-chemical studies. Various advanced methods such as chromatographic, spectrophotometric and use of molecular biomarkers in fingerprints are employed in standardization of herbal drugs. Standardization of polyherbal formulations minimizes batch to batch variation; assure safety, efficacy, quality and acceptability of the formulations. TLC and HPTLC fingerprint profiles were used for deciding identity, purity and strength of formulation and for fixing standards for ayurvedic formulation.