

Quality botanicals

Most important requirement of Traditional Herbal Medicinal Products or Functional/Nutraceutical food is quality botanicals. The therapeutic or nutritional activity of botanical raw materials is due to the presence of chemical constituent/s in it. The quantity and quality of this chemical constituent/s will ultimately influence the quality of raw botanicals. Unlike, synthetic chemicals which are made in laboratory their quality and uniformity can be conveniently controlled while botanicals being of natural origin pose considerable variations and make it difficult to achieve the same. For the production of quality botanicals mere control at manufacturing level will not yield much but it needs to start from the propagation of plant level and follow throughout till it reaches to the consumer. Listed below are some of the factors which will influence the quality of botanicals and appropriate measures to be followed:

Plant materials are chemically and naturally variable: Being of natural origin plants tend to vary in their composition and concentration as regard to the chemical constituents. Same plant materials from different regions show variations as regard to the chemical profile. This can be overcome by selecting the appropriate geographical source, preferably natural habitat which will produce quality botanicals. Further, propagation by use of Plant tissue culture technique can guarantee uniformity in the crop. In plants, Chemo-varieties and chemo cultivars exist. The study as regard to principle component analysis (PCA) will help to classify different chemotypes, and help target cultivar selection and germplasm enhancement.

The methods of harvesting, drying, storage, transportation, and processing of raw botanicals will have an effect on the quality: Each herbal drug needs to be carefully studied and appropriate standard operating procedures should be established as regard to the harvesting (time and method of collection) and post harvest treatment (processing, drying, storage and transportation). In majority of the cases, raw botanicals are collected when they are rich in their chemical constituents while in few cases, ease of collection need to be considered. Some of the botanicals after collection are only subjected to drying while in others they are sliced, chopped, cut to facilitate drying and in few cases subjected to processing like turmeric fingers are boiled in water to give a protective coat of gelatinized starch, ginger is decorticated to improve its quality or limed to enhance shelf life, etc.

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Extraction of botanicals: Herbal drugs are usually mixtures of many constituents and herbal medicinal products in its entirety are regarded as the active substance. Depending upon the requirement, appropriate method need to be employed for extraction of botanicals. The target can be single constituent like forskolin from *Coleus forskohlii* root or if it is being used as total extract then method of extraction must ensure the complete representation of all the constituents in the final extract. The factors which will influence extraction are polarity of extracting solvents, time and temperature of extraction, method of extraction, instability of constituents, etc. While processing care need to be taken to preserve the natural chemical composition of botanicals.

Thus, the challenges posed for the preparation of raw material should be effectively dealt with, to ensure availability of quality raw botanicals/extracts for effective healthcare.

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