IL-11

Developments in the Standardization of Herbal Drugs

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Contemporary medical practice is gradually shifting away from the dogma of monotarget monosubstance therapy, in favour of multi target multidrug therapy. Further, there is increasing awareness of the importance of modulating the body's own repair and defence mechanisms, rather than only targeting a single disease causing agent. In this context, there has been a significant growth in recent years in the number of pharmacological studies and clinical trials being carried out with complex herbal drugs used in traditional medical systems such as Ayurveda and Chinese Traditional Medicine.

The use of standardized drugs is essential for the proper conduct of these studies. In the absence of knowledge on which specific set of compounds in the complex mixture are responsible for the biological activity of the drug, quantitative chromatographic profiling has become the most important method of obtaining information on two vital attributes of a drug, its identity and potency. Quality control of industrially produced herbal drugs also require their standardization.

TLC, GC and HPLC methods are the most widely used for this purpose. Hyphenated techniques such as GC-MS, LC-MS and LC-NMR provide a method to identify compounds responsible for specific peaks in the chromatogram, thereby helping in further characterizing the drug. This is of use in trouble shooting in industrial production as well as in research into the relationship between constitution and activity of herbal drugs.

Much recent research is focused on the use of various chemometric techniques to evaluate chromatographic profiles. These techniques are used to study not only herbal drugs but also the variations in the herbal raw materials used in the production of these drugs. Developing representative chromatographic profiles for complex polyherbal drugs is not always straightforward, and matrix effects in particular can interfere with quantitative work.