



# HERBAL MEDICINES: KEEPING ABREAST WITH CHANGING TECHNOLOGY



Prof. Dr. Annie Shirwaikar

Department of Medicinal chemistry and Phyto-Chemistry,  
Gulf Medical University, Ajman, United Arab Emirates.

Prof. Dr. Annie Shirwaikar  
M.Pharm, PhD  
College of Pharmacy,  
Gulf Medical University,  
Ajman, United Arab Emirates

The use of herbal medicine has increased worldwide in recent years as they are believed to be safer with fewer adverse effects as compared to conventional medicines. Growing evidence points out that many current conventional drug therapies suppress the symptoms of disease while really ignoring the underlying processes, in contrariety to natural products which demonstrate better clinical results as they address the root cause more effectively. The full therapeutic potential of the herb is often, however, not realized because of unsuitable molecular size and/or poor lipid solubility, which in turn results in low absorption with reduced bioavailability. The poor progress in herbal medicine development has prompted the need for a multidisciplinary approach to drug delivery.

For a long time a lack of scientific evidence, coupled with manufacturing problems like isolation and identification of individual pure phytochemicals and standardisation deterred the development of herbal drugs and polyherbals as novel formulations. The need to increase patient compliance and to avert recurrent administration has necessitated a scientific approach in the development of these formulations. The novel drug delivery system technology has been useful in enhancing the bioavailability of herbal drug delivery systems. Novel carriers viz. liposomes, niosomes, nanoparticles, lipid based systems *etc.* have been documented for successful modified herbal drug delivery. Some noteworthy advantages over the conventional herbal formulations include enhanced stability, solubility, bioavailability, pharmacological activity, sustained delivery *etc.*

The use of pure phytochemicals is often associated with loss of specific bio-activity. Some constituents may be destroyed/ inactivated at the gastric pH in the multi-constituent herbal extract, taken orally. However, often, the chemically complex nature of the extract may be necessary for improved bioavailability of the active phytochemicals. Many water soluble phytochemicals, like the phenolics, display poor bioavailability across the lipid membranes of intestine. The use of novel lipid based carriers can enhance the release rate as well as its ability to permeate the lipid biomembranes.

Phospholipid drug delivery systems have shown promise for more effective and appropriate systematic drug delivery. The "Phytosome" is formed by complexing via intermolecular bonding a molar ratio of phosphatidylcholine with the polyphenolic/ polar phytochemicals like flavonoids, xanthones, terpenoids and tannins. These advanced herbal products with improved absorption and utilization, exhibit improved drug delivery as compared to the more conventionally prepared herbal extracts. The superior pharmacokinetic and pharmacological parameters of the phytosome improve its applicability in treating various diseases because of the availability of a higher concentration of phytochemical at the site of action (liver, heart, brain, kidney etc).

The overall health boosting potential of different herbal products have been established through phytochemical and phytopharmacological research but there must be efforts to advance the bioavailability of plant extracts/ herbal drugs with poor lipid solubility and bioavailability. Phytosome technology has as a molecular delivery vehicle enhanced the bioavailability of many popular herbal extracts including Silybium, Ginkgo, Green tea, Ginseng etc. Herbal drug technology has to move forward to keep abreast with the changing drug delivery technology I end by quoting C.S. Lewis "There are far better things ahead than any we leave behind".

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Email:annieshirwaikar@gmail.com

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