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Ethnopharmacology and random screening

[La etnofarmacología y el cribado aleatorio]

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Dear Editor:

Humankind has been using plants as food and medicine for centuries. This interaction has enabled them to understand the harms and benefits achievable through them thus laying down the foundation of traditional knowledge of medicinal plants (Ghorbani et al., 2006; Sulejman, 2007). The term “Ethnopharmacology” was first used in 1967. Since then it has been used as a valuable tool for drug discovery (Heinrich and Gibbons, 2001). Ethnopharmacology is an interdisciplinary field focusing on the scientific study and experimentation to prove and validate the traditional uses of plants and other natural products. It also includes the study of the bioactive compounds present in these products so that they can be synthesized on a commercial basis. Ethnopharmacology plays an important role in the preservation of the cultural heritage. It also identifies the harmful effects of many traditional therapies and provides an up to date knowledge and assistance to the herbal practitioners.

Ethnopharmacological studies are a result of combined efforts of scientists from many fields mainly, botany, pharmacology and chemistry (Holmstedt and Bruhn, 1983; Heinrich et al., 2006). The source of information to carry out various studies comes from ethnobotanical and ethnomedical literature. Thus, ethnopharmacology proves the traditional claims in a scientific manner (Waller, 1993). The study of biological activities may involve the use of different *in vitro* or *in vivo* models. Both approaches have several advantages and disadvantages. The decision whether to use an *in vivo* or *in vitro* assay is made after considering many factors. For example if the

amount of sample under study is high and sufficient financial resources are available, *in vivo* assay may be preferred if there are no ethical issues under debate. These assays will give a better picture of the medicinal activity of the plant. However if there is time limitation, inadequate funds or less sample volume, an *in vitro* assay will be a better choice in such case (Houghton et al., 2007). After the successful completion of a series of different assays and proving of significant biological activities, the medicinal plant is subjected to the drug development process (Cordell and Colvard, 2005).

Besides the ethno-directed approach, the selection of plants for pharmacological screening may be based on random screening in which all of the plants belonging to any specific area are selected and tested for different activities. Thus, random screening does not require any proper justification through literature. The plants can also be selected for study if they are rich in phytochemicals or if other members of the family to which it belongs, possess biological activities. The latter is because many associated species possess similar phytochemicals (Waller, 1993; Ghorbani et al., 2006; Rout et al., 2009). This property has specially been noticed in the case of alkaloids.

Random screening and phytochemical approach has been found to be very beneficial in discovering new leads especially when folk knowledge is unavailable. These prevent many plants from being ignored due to lack of supporting information (Ghorbani et al., 2006). The two methods however prove to be costly as compared to ethnopharmacological approach as considerable amount of resources are wasted during the trial and error procedure. Biological studies are usually considered to be preliminary. Due to unavaila-

bility of costly instruments for phytochemical studies, scientists from developing countries with large flora fail to disseminate their findings on large scale through publication in high impact journals.

CONFLICT OF INTEREST

The author declares no conflict of interest.

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