

Review

Herbal pathies (Unani, Ayurveda) need to review their way of research

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ABSTRACT

World health organization has recently published a strategic plan for the development and promotion of traditional system of medicine. Herbal pathies especially Unani and Ayurvedic systems of medicines have great scope in this aspect. But, there are several problems with these pathies in the current era, as the way of research and identification is still on classical system. The correct identification of medicinal plant is one of the major problems in both the system. This should be corrected with the modern tools and techniques. The various types of data including recent discoveries, economical growth, ethnobotanical literature and extremely rapid increase in herbal journals and books have emerged great scope for these pathies. At the same time several challenges and threats are present including herb-drug interaction, false reports, toxicity studies etc. In this review paper, opportunities, threats, and researches to be focused will be discussed.

Keywords Unani, herbal, herb-drug interaction

INTRODUCTION

Medicinal plants have played an important role in the treatment of diseases all over the world (Jagtenberg et al., 2003; Mahady, 2001; Pal et al., 2003). Infact, according to World health organization (WHO) report, more than 80% population is still depends on directly or indirectly on herbal medicine sources for the treatment of various ailments, named under different pathies (World Health Organization, 2000; Parray et al., 2012). In this regard, WHO has recently published a strategic plan for the development and promotion of traditional system of medicine (TSM) in 4 special areas, which shows the interest of the world to connect them with TSM. These includes: Identification of traditional medicinal plants, Development of research and education, Establishment of unity and cooperation between the researchers of traditional and modern medicine, and Development of cultivation of the needed herbs to prevent destruction of natural resources (Barnes, 2003; Dubey et al., 2004; Mukherjee, 2002; World Health Organization, 2013).

The release of this strategic plan shows the importance of this reliable source for the treatment and prevention of diseases. However, in this regard Unani and Ayurvedic systems of medicine should review its way of research. The correct identification of medicinal plant is one of the major problems in both the system. This should be corrected with the modern tools and techniques (Barnes, 2003; Parray et al., 2012; Ramawat et al., 2008; World Health Organization, 1998). Further, to explore them on the basis of new scientific basis, we need an interaction with multidisciplinary team work including

ethno-botanists, pharmacologists, physicians and phytochemists for the fruitful outcome of medicinal plants research. Since, it was need from many decades; the WHO has finally included it in its strategic plan. Earlier times, Unani and Ayurvedic physicians were themselves as clinicians, pharmacist, cultivators and other related disciplines were conducted by them, now the scenario has been changed, every part has been separately developed, advanced and standardized as per recent information (Afaq et al., 1994).

NEED OF REVIEW OF RESEARCH IN HERBAL PATHIES

The question may be asked why we need to review our methods of research; dispensing and preparation of medicinal plant as single (*Mufrad*) or compound formulations (*Murrakab*). Because, there are several factors from clinical to least side effects, commercially to financially, easy and different forms of herbal extracts to be used in daily life not only for medicinal purposes but also nutraceutical purposes. Nowadays there is revival of interest in the consumption of herbal medicines in the form of standardized extracts, not only in Europe and other western countries but even in India, Pakistan, Bangladesh and other Asian countries as well (Mukherjee, 2002; Parray et al., 2012; Tilburt et al., 2008; Yadav et al., 2008). For example, over 70% of German physicians prescribe herbs more commonly than any chemical medicine to treat mild to moderate depression, because other allopathic and chemical entities have not given them good results, which increases the demand for the herbal supplements. The other diseases where herbs are used include a variety of chronic and acute conditions such as cardiovascular disease, prostate problems, inflammation, and to boost the immune system. Further, the other advantage of herbal medicine is that they can be processed and can be taken in different ways and forms, e.g., the whole herb, teas, syrup, essential oils, ointments, rubs,

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capsules, and tablets that contain a ground or powdered form of a raw herb or its dried extract (Yadav et al., 2008). Plants and herbs extract vary in the solvent used for extraction, temperature, and extraction time, these include alcoholic extracts (tinctures), vinegars (acetic acid extracts, *sirka*), hot water extract (*Joshanda/khaisanda*), long-term boiled extract, usually roots or bark (decoctions *Joshanda*), and cold infusion of plants (macerates).

Similarly, the impact of journals publishing data on medicinal plants is increasing very fast. In recent years several new titles, e.g. *Journal of Ethnopharmacology*, *Phytotherapy Research*, and *Phytomedicine* have joined long-running publications such as *Planta Medica*, *Phytochemistry*, and *Journal of Natural Products*. For practically all such titles, the impact factor (an indicator of citation and scientific importance of a journal) has risen steadily in recent. A good example of this is the *Journal of Ethnopharmacology*, for which the impact factor has doubled in the past ten years. Besides this, there is also a rising trend to include phytotherapy in the curriculum of medical schools (Mukherjee, 2002).

A lot of medicinal plants such as Garlic, Ginseng, Ginger, Ginkgo, Ispaghol, St John's Wort, Curcuma, Brahmi, Asgand, Asrol etc have gained popularity for the treatment or prevention of a lot of disorders.

HERBS AS LEAD FOR DRUG DEVELOPMENT

Ethnobotanicals are important for pharmacological research and drug development, not only when plant constituents are used directly as therapeutic agents, but also as starting materials for the synthesis of drugs or as models for pharmacologically active compounds. About 200 years ago, the first pharmacologically active pure compound, morphine, was produced from opium, extracted from seeds pods of the poppy *Papaver somniferum*. This discovery showed that drugs from plants can be purified and administered in precise dosages regardless of the source or age of the material. With this continued trend, products from plants and natural sources, as alkaloid, fatty acids, tannins, sitosterols and other plant related microorganisms (such as fungi and marine microorganisms) or analogs inspired by them have contributed greatly to the commercial drug preparations today. Examples include the cardiac stimulant digoxin from foxglove (*Digitalis purpurea*); salicylic acid, a precursor of aspirin, derived from willow bark (*Salix spp.*); reserpine, an antipsychotic and antihypertensive drug from *Rauwolfia spp.*; and antimalarials such as quinine from *Cinchona* bark (Balunas et al., 2005; Parray et al., 2012; Shu, 1998; Thomas et al., 2004; Yadav et al., 2008). In this regard, medicinal plants have also been a reliable source for preparation of new drugs, otherwise new chemical entities needs lot of financial source and still the efficacy cannot be guaranteed as well.

THREATS AND CHALLENGES

However, there are several challenges with herbal medicine as such; the quality control of herbal medicines has a direct impact on their safety and efficacy, so it must be free from contamination and adulteration. Another problem is that despite the popularity of botanical dietary and herbal supplements, some herbal products on the market are likely to be of low quality and suspect efficacy, even if the herb has been shown to have an effect in controlled studies using high-quality product (World Health Organization, 1998; Iqbal et al., 2015;

Mukherjee, 2002; Parray et al., 2012; Shu, 1998; Tilburt et al., 2008; Yadav et al., 2008).

There is a belief that herbs, as natural products, are inherently safe without side effects and that efficacy can be obtained over a wide range of doses. Although herbs may well have undesirable side effects, there are no set "doses," and herb-drug or herb-herb interactions are possible. Several researches in this aspect are available from number of clinicians which provides the proof of herb-herb and herb-drug interactions in both positive and negative directions (Chavez et al., 2006; Iqbal et al., 2015; Shu, 1998; Thomas et al., 2004; Zhou et al., 2008). A major hypothetical advantage of botanicals over conventional single-component drugs is the presence of multiple active compounds that together can provide a potentiating effect that may not be achievable by any single compound. This advantage presents a unique challenge for the separation and identification of active constituents. Compounds that are identified by activity-guided fractionation must be tested in appropriate animal models to confirm *in vivo* activity. Ideally, the composition of the total botanical extract must be standardized and free of any potential hazards, and plants should be grown specifically for the production of botanical extracts under controlled conditions and originate from a characterized and uniform genetic source with a taxonomic record of the genus, species, and cultivar or other additional identifiers (Chavez et al., 2006; Jagtenberg et al., 2003; Mahady, 2001; Balunas et al., 2005; Ramawat et al., 2008; Thirumalai et al., 2011; Tilburt et al., 2008; Yadav et al., 2008). Because the environment can significantly affect phytochemical profiles and the efficacy of the botanical end product, botanical extracts can vary from year to year and may be significantly affected by temperature, drought, or flood as well as by geographic location.

Therefore, biochemical profiling must be used to ensure that a consistent material is used to produce a botanical. Herbs contain multiple compounds, many of which may not be identified and often there is no identifier component, and chemical fingerprinting is in its early stages and is lacking for virtually all herbs. This makes standardization of botanicals difficult.

Herbal materials for commercial products are collected from wild plant populations and cultivated medicinal plants. The expanding herbal product market could drive overharvesting of plants and threaten biodiversity. Poorly managed collection and cultivation practices could lead to the extinction of endangered plant species and the destruction of natural resources (World Health Organization, 2003; Mukherjee, 2002; Srinivasan, 2006; Thirumalai et al., 2011; Thomas et al., 2004).

CONCLUSION

Herbal pathies need to review their research and thoughts to appeal the world and to counter the one of most important challenges in the current era. These includes: research should be continued in quality, safety, molecular effects, and clinical efficacy of the numerous herbs especially for those which are commonly used. Newly emerging scientific techniques and approaches should be adopted which provide the required testing platform for this. Genomic testing and chemical fingerprinting techniques using hyphenated testing platforms are now available for definitive authentication and quality control of herbal products. Similarly, research is needed also to meet the challenges of identifying the active compounds in the plants, and there should be research-based evidence on whether

whole herbs or extracted compounds are better. The issue of herb–herb and herb–drug interactions is also an important one that requires increased awareness and study, as polypharmacy and polyherbacy (even a single compound formulation i.e. Murrakab) are common in herbal pathies especially in Unani and Ayurveda.

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CONFLICT OF INTEREST

None.

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