

Herbal Medicine in India

Indigenous Knowledge,
Practice, Innovation
and its Value

Saikat Sen
Raja Chakraborty
Editors

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Preclinical and Clinical Trials of Indian Medicinal Plants in Disease Control

Harun Al Rashid, Anindita Kundu,
Vivekananda Mandal, Phurpa Wangchuk,
and Subhash C. Mandal

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9.1 Introduction

At the beginning of human civilization, herbs have been an integral part of the society, valued for both their culinary and medicinal properties. Herbal medicine plays a great role to fulfil the needs and has been used for curing ailments for many centuries. Broadly, medicinal plants are used as major compounds or as a crude substance. Just a small number of plant species has been methodically investigated for their therapeutic effect (Heinrich and Gibbons 2001). India is one of the large countries in the world, which has distinctive assets of medicinal herbs and enormous traditional awareness of the use of herbal medicine for treating diverse ailments. Traditionally some medicinal plants such as ‘Rasayana’ has been used for over 1000 years in the Indian traditional health care systems (Scartezzini and Sproni 2000; Majumder et al. 2016). Nearly all Indian practitioners formulate and dispense their own regimens. However, there many formulations that are manufactured in large industrial scale and marketed worldwide. According to the World Health Organization (WHO), 21,000 plants are used for medicinal purposes worldwide and 3000 species are reported from India alone (Wangchuk et al. 2016) out of which 150 species are used commercially in large scale. India is the largest producer of herbs and it is often known as botanical garden of the world (Seth and Sharma 2004).

This chapter focuses on medicinal plants used in the treatment of a major chronic disease, which are associated with huge socio-economic losses. It highlights the preclinical and clinical trials outcomes, and discusses the role of WHO and Government policies on medicinal herbs.

9.2 Biological Background of Herbs

Chemical compounds (also commonly known as phytochemicals) are manufactured by all herbs as part of their normal metabolic activities or as part of their defensive mechanism. These phytochemicals are divided into (1) primary metabolites (examples are sugars and fats), which are found in all herbs; and (2) secondary metabolites (examples are alkaloids and terpenoids), which are found in a smaller range of herbs, serving a more specific function (Vaidya 1997). A number of chemical constituents are toxins used to deterpredation and others are pheromones utilized to magnetize insects used for pollination. Medicinal herbs produce a baffling array of phytochemicals (Vaidya et al. 1996) and few of them including quinine, morphine, codeine, digoxin and artemisinin have been developed into drugs for treating many human diseases (Vaidya 1997).

9.3 Herbs Used in Disease Control

9.3.1 CNS Active Herbs

According to Vaidya, the span of CNS dynamic Indian Medicinal Plants in therapeutics has been exemplifying in an assessment commentary. The subsequent clause center on the supplementary effort conceded (Singh et al. 1997).

9.3.1.1 Nootropics

Different seeds extracts of *Pongamia pinnata* (Karanj) lessen pentobarbitone sleeping time, by stimulation of the hepatic microsomal enzyme method and also roots having the same activity (Kumar and Singh 1996). However, the petroleum