Review

Jamu: Indonesian traditional herbal medicine towards rational phytopharmacological use

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Abstract

Jamu is the Indonesian traditional herbal medicine that has been practised for many centuries in the Indonesian community to maintain good health and to treat diseases. Although modern (conventional) medicine is becoming increasingly important in Indonesia, jamu is still very popular in rural as well as in urban areas. Based on its traditional use jamu is being developed into a rational form of therapy, by herbal practitioners and in the form of phytopharmaceuticals. Jamu has acquired a potential benefit, both economically and clinically. We surveyed the most frequently used plants in jamu that have also been investigated regarding their constituents and pharmacological effects. The Indonesian government has divided the preparation of medicinal plants into three categories, i.e. jamu, standardized herbal medicines and fitofarmaka (phytomedicines). As the biological activity ascribed to jamu is largely based on empirical data, more research is needed to scientifically prove efficacy and to assure safety. In the further development of jamu, ethical issues such as intellectual property rights, benefit sharing, biodiversity and conservation need to be considered. This paper aims to review the current status of jamu and to give comprehensive views that can be used in its future development for the further improvement of its utility in curing illnesses and maintaining good health.

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1. Introduction

Next to the Amazon rain forests, Indonesia has the second biggest biodiversity in the world expressed by a high number of indigenous medicinal plants. Based on this rich source of medicinal plants, most of the Indonesian people especially in rural areas use traditional herbal medicines known as jamu to treat disease. Jamu is a word in Javanese tribal language, meaning the traditional medicine from plants. Minerals, animals and parts thereof have also been used but are not the subject of this review. Today, jamu has been adopted into Bahasa Indonesia with the similar meaning (Riswan and Roemantyo, 2002). Jamu gendong is a kind of traditional jamu sold without a label and freshly prepared (not preserved) from plant material in warung, the ubiquitous stalls along the streets in Indonesia (Limyati and Juniars, 1998; Suharmiati, 2003). Jamu gendong is instantly served to whom orders this jamu requested preparation. The sellers bring the jamu from door to door. The word gendong itself means to carry something on the back of a body. The fresh jamu is put inside the bottles and stored in bamboo or rattan baskets and they use a long wide shawl called selendang for carrying the baskets on their back (Riswan and Roemantyo, 2002). Nowadays the production of jamu is also being developed on an industrial scale. The Indonesian government, industry and academia all recognize that to further the development of jamu, extensive research is required to establish the safety and efficacy of the many traditional jamu preparations.

This paper reviews the use of Indonesian medicinal plants used in jamu medicine including its history, current status, economic potential and scientific development plus possible future developments.

2. Methodology

Both online and offline literature searches were carried out to compile this review. PubMed (Medline), Highwire and ISI Web of Science were used to retrieve any online publications using the following search terms: Indonesia, medicinal plants, ethnopharmacology, jamu, phytomedicine, specific plant species, herbal medicines, natural product medicines, phytochemistry, pharmacognosy. Local library searches looking at the Medicinal Herbs Index in Indonesia (Anonymous, 1995) were also carried out by Indonesian researchers able to read old Java language in the cities of Bandung (the capital of West Java province) and Yogyakarta (an old cultural city in central Java). About 5000 species of medicinal plants were retrieved from the Medicinal Herbs Index in Indonesia and the plants that are most frequently used as constituents of jamu are discussed in this paper.

3. Indonesian medicinal plants

3.1. Biodiversity

Biodiversity is defined as the variety of all life forms on earth, along with the interactions between them and their physical environment. As an archipelagic state with thousands of islands, Indonesia is endowed with a rich and unique biodiversity. The area of Indonesian tropical forests covers about 143 million hectares and is home to about 80% of the world's medicinal plants. It is estimated that the Indonesian tropical forests contain 28,000 plant species. There are various reports concerning the inventory of higher plants in Indonesia. The
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