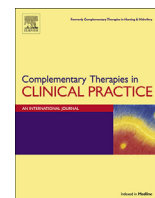




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Medicinal herbs and methodologies for their pharmaceutical compounding in the West Bank/Palestine



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A B S T R A C T

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This study focused on herbalists, herbal shops and people currently using traditional Arabic medicine. Informants were asked to list plants and methods for obtaining plant herbal extracts used to manage a range of illnesses. A total of 109 plants were identified, of these, principle plant elements included, leaves (47.3%), fruits (18.5%) and seeds (18.0%) were most commonly utilized. Extraction methods included decoction (boiling) 51%, and infusion 17% and prepared as creams, powders, syrups, food or cooked. Many plant species are used by herbalists for treating a range of ailments. This study suggests that a lack of methodological standardization during herbal extraction could compromise herbal stability. There is also a need to monitor for potential adverse drug interactions when used concurrently with prescribed medications.

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1. Introduction

Herbs have been used as a food source and as medicine for several thousand years. In turn, Ancient Arabic medicine was influenced by the medicinal practices in Persia, Mesopotamia, Greece and Rome, and India [1]. Throughout history, various herbs have been used to ameliorate a range of diseases and illnesses, it would appear that herbal medicines have remained popular due to historical and cultural reasons; and we are witnessing renewed interest in natural medicines across western countries. Indigenous plants and plant extracts continue to provide a foundation for the development of modern pharmaceutical development and. Ethnopharmacological research is crucial in the development and discovery of new drugs from natural sources [2,3].

In Palestine, numerous medicinal plants are described as treatments for a range of illnesses and symptoms. Herbal medicine is considered an integral part of the Palestinian culture and plays a pivotal role in current public healthcare. Palestine is a small country but has a diversity of wild plants due to its varied geography and climate. The hills and mountains of Palestine are

covered with more than 2600 plant species of which over 700 are noted for use as medicinal herbs or botanical pesticides [4,5]. However, only a few ethnobotanical studies on medicinal plants have been undertaken [2–4,6]. In this project, herbal products used in folk medicine were investigated. Informants were asked how to extract the medical agent present from plants and to prepare a suitable dosage for patient use. The purpose of this study was to conduct an ethnopharmacological survey on natural products currently used in healing diseases and the methodology used in extraction of active compounds and preparing a suitable dosages.

2. Method

2.1. Study design

A questionnaire based cross-sectional study was conducted in the West Bank/Palestine between January and August 2012 by pharmacy students from An-Najah National University. The study was approved by Institutional Review Board (IRB) of An-Najah National University. The survey included all major regions in the West Bank: Jenin, Tulkarm, Qalqilya, Nablus, Salfit, Ramalha, East Jerusalem, Bethlehem and Hebron. The West Bank is divided into four major biogeographical zones: semi-coastal zone, central highlands, eastern slopes, and the Jordan Rift Valley [5] (Fig. 1).

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2.2. Population and sampling

The study included visits to herbalists, herbal shops and individuals involved in the use of traditional Arabic medicine. Pharmacists were excluded from this study as law prohibits them from selling herbal products unless they are registered and approved by the ministry of health. The aim of this study was to evaluate traditional methods of herbal extraction. A convenience sample of 100 informants used including well known herbal practitioners.

2.3. Data collection

A pilot study was undertaken of 10 herbalists from different geographical areas of the country. The questions were subsequently modified and assessed for content analysis, areas was conducted and the questionnaire was modified according to their comments. The informants were asked to answer a face to face questionnaire after obtaining an oral consent. The data collection form included a list of common diseases and conditions and participants were asked to list plants, specific plant parts used, such as seeds, leaves, roots, etc. and methods of preparation. Descriptive statistical analysis was used.

3. Results

Of 100 informants approached, 92 answered the questionnaire. A total of 109 plants were identified as ethno-medical plants across the study area. Table 1 lists plants, parts used and consumption/application procedure for 17 medical problems. Plants reported by two informants or more were included. Some plants were also perceived as common edible plants.

Leaves (47.3%), fruits (18.5%) and seeds (18.0%) were most widely used (Fig. 2).

Methods of preparation included decoction (boiling) (51%), infusion (drenching) (17%). Some plant extracts were prepared as topical creams, powders syrups, added to food or cooked (Fig. 3).

4. Discussion

A high number of plants were used as traditional folk medicine. In this study 109 plants were cited. In a previous Palestinian herbal study 129 plant species were reported and used in Arabic traditional medicine for the management of various diseases [4]. This might be due to the diversity of plant resources available in Palestine. In other studies from other countries, the number of used medicinal plants in ethno-botanical surveys was also high; for instance Turkey (118) [7], Iran (138) [8], Philippines (112) [9]. This contrasts with studies conducted in Jordan (58) [10] and Egypt (48) [11], however careful examination of specific methodologies would be required to ensure parity across these studies.

Many of the plants cited in this study were used both as food and medicine and whilst such concurrent use is well established, this study focused upon the specific methods of active herbal plant extraction [5]. Many of the uses cited by respondents are well known and evidence based [1,2,5,12], however, some of the plants cited require further investigation to identify particular therapeutic benefits. A multidisciplinary approach combining traditional herbal knowledge with pharmaceutical research could be a valuable method for identifying potential herbs with possible clinical benefits [13].

To achieve an efficacious and safe herbal preparations, identification and selection of the medicinally active component, and amounts of the plant should be carefully identified and recorded to ensure standardization during the preparation process. It is well acknowledged that not all the plant parts contain the same concentration of the active constituents. Other factors to considered include harvesting time of the herb soil climatic conditions and methods of drying, processing, and extraction [12]. In the study described here, most plant extracts were prepared by decoction and infusion; however, method of preparation of the plant extract is a significant issue when considering herbal concentrations and dosage.

Moreover, many plant extracts may be rendered unpleasant or unpalatable potentially resulting in poor patient compliance. In this study however, no informants commented upon the taste of a preparation. An example of this is Alum, one of the most commonly cited plants in this study which is described as having a strong stinging taste making consumption as decoction a challenge for patients.

Most informants were scientifically unable to provide a standardized method for either extraction or compounding. Accordingly, this study suggests that pharmacists or specialized trained personnel should undertake herbal extraction and preparation.

Many courses provided by faculties of pharmacy teach and train future pharmacists about the appropriate, extraction compounding and use of medicinal plants. Nevertheless, a greater awareness and understanding about informal, lay, methods of herbal extraction and use should be carefully considered. Not least, the extent to which individuals may continue self-medicate with herbal extracts whilst simultaneously receiving prescribed medications. Variations in the dosage of informally prepared herbal extracts given to individuals, as well as potential drug interactions between herbs and allopathic pharmaceuticals, although difficult to determine present are important considerations and offer future areas for research [5,14].

Limitations of this study acknowledges that answers reported by the respondents cannot be validated and recall bias is possible. The study sample might not be representative of practice across all other cities or villages and camps. However, these results offer an insight into the extent of informal herbal extraction and use. It also highlights the need for further research in this area.

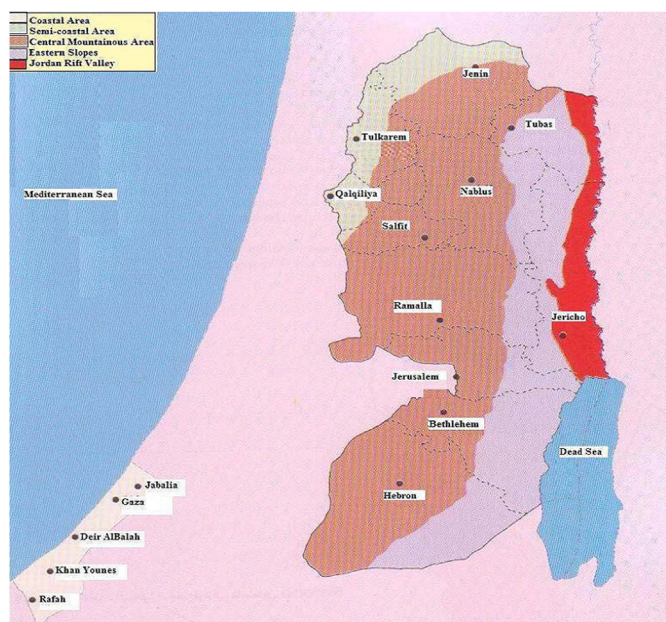


Fig. 1. Study areas in the West Bank.

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