

Medicinal Plants and their Traditional Uses

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It is estimated that there is the number of between 750,000 and 1,000,000 plant species on the world. The 500,000 of them have been identified and named. Around 2000 new flowering plant species are identified and named in each year. The number of plants which have been used for treatment since ancient times shows a steady increase. According to a report released by the World Health Organization (WHO), the number of plants used for treatment is estimated to be around 20,000. The studies on medicinal plants and active substances derived from them have increased the interest in these plants in recent years [1-3]. Plant products are generally preferred and used by patients who have chronic medical conditions including cancers (2%), liver diseases (21%), HIV (22%), asthma (24%) and rheumatologic disorders (26%). Many believe that natural treatment methods are harmless. Whereas, many recent scientific studies have pointed out the serious consequences of the side effects of herbal products such as giving other damages to patients who

seek solutions to problems such as obesity. Side effects may occur due to misuse of plant products, contamination, and interaction with other plants and medicines. Therefore, it is necessary to be careful when using herbal products [4, 5].

Traditional uses of Medicinal Plants

Herbal drugs (herbal medicine raw materials) can be prepared for use in different ways. The simplest way is to take the drug as it is in powder form. However, in terms of taking it easier and determining the amount taken; Pills, infusions, decoctions and ointments are commonly used methods.

Powder (pulverise)

It is obtained by pestling or milling the plant pieces. The easiest way to use in powder form is to pour the fine powder into half a glass of water and drink the mixture after mixing.

Pill (pilulae)

It is obtained by turning the finely powdered form of drug into pill with the help of excipient.

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Substances such as honey, sugar group, starch, roasted chickpea flour, gum Arabic, liquorice honey which have no treatment effect should be preferred. Drug powder is pulped with the appropriate excipient material, a rod of suitable length is made by rotating this dough in the palm, the rod is divided into pieces of appropriate size by a knife and each piece is shaped as the pill by rolling. Liquorice powder or talc powder is placed between the pills to prevent them sticking to each other.

Infusion

It is the most commonly used method in the use of drugs as medicine. Boiling water is poured on the milled plant pieces for preparing the infusion, and the mixture is kept by mixing in a closed container for 5 min. After cooling, it is filtered through fine cheesecloth. The amount of the drug to be used is usually 2 g drug for 100 g water. The quantities are shown as (2%), (5%) or (10%). Infusions are prepared as fresh at every turn. A fine amount of honey or sugar can be put into the mixture as a sweetener.

Decoction

Sufficient amount of cold water is poured on the crushed plant pieces for preparing the decoction and heated on a light fire for half an hour by stirring frequently, and it is filtered with fine cheesecloth while hot. The amount of the drug to be used is usually 2 g drug for 100 g water. Different decoction and infusion methods are used for different plants and plant pieces. (A) Drugs containing flower, thin leaf or essential oil: A teaspoon coarsely powdered drug is poured into a water glass, and boiling water is poured on it. It is roofed with cover and left to rest for 5 minutes. At the end of this period, it is filtered by means of cotton. (B) Coarse-grained leaf or soft fruits: a teaspoon plant material is boiled for 1-2 minutes in a container with a glass of water, and left to rest for 5 minutes and then filtered with the help of cotton. (C) Root, bark, hard fruits and seed drugs: A teaspoon coarsely powdered material is boiled for 3-5 minutes in a pot with a cup of water, and left to rest for 5 minutes and finally filtered by means of cotton.

Ointment (Unguenta)

It is a kind of medicine which is made by oils such as saturated fat, oil (olive oil, almond oil), lanolin

and vaseline. The substance or substances to be put into the ointment are firstly powdered in the mortar in order to prepare the ointment. It is then crushed with a small amount of liquid oil, and then the excipient substance (usually an equal amount of lanolin and vaseline) is added slowly onto the active substance and thoroughly mixed in the mortar. Ointments are stored in closed containers and cool places [6-11].

The Place of Medicinal Plants in Treatment

The scientific, technological and social development processes and correspondingly the historical development of the concept of health and disease have led to the emergence of mystic, polypharmacy, aetiology, traditional and modern medical practices, respectively. It is frequently encountered to the traces of the early stages of the historical development process of medical practice today. Especially alternative medicines (natural or traditional medicine) and its practices have caused the many different stages of this developmental period to be conveyed to today's societies [12]. The fact that chronic diseases are the main cause of disease and death, and that the natural course of these diseases cause the patients and healthcare professionals to engage in different researches from time to time because of the reasons such as not achieving complete success in the known ways of protection and diagnosis. However, difficulties in accessing health services also increase seeking these kinds of searching. For all these reasons, phytotherapy which is one of the alternative medicine practices has become basic subjects of many scientific studies about treatment with plants. Alternative medicine, defined in a variety of terms (complementary, supplemental, and non-traditional) includes treatment practices which are not found in traditional medicine.

Traditional medicine is spreading rapidly in all regions of the developing world and in industrialized countries. It was determined that more than 50% of the population in Europe, North America and other industrialized regions used at least one of complementary or alternative medicine methods. It has been reported that 75% of people with HIV / AIDS especially in San Francisco, London and South Africa use traditional/alternative medicine [8-11]. Although the vast majority of medical practices in the United States are

traditional, nearly 70% or 90% of health care services in the world is provided by alternative traditions and practices [13,14]. It was alleged that the term phytotherapy which can be explained as an approach about treating patients by using plants, was firstly mentioned in the journal of "La Presse Medical" by the French physician Henri Len who lived between 1870 and 1953 [15]. However, we see that plants had been used by every society in every period of history long before this date in order to protect or recover health. The Ninova tablets which are the first written document on this subject and dating from 3.000 years B.C. prove the existence of treatments with herbal and animal drugs in the Sumerian, Akkad and Assyrian civilizations founded in Mesopotamia [14]. Rig Veda who is one of the important representatives of Indian medicine developing in parallel with Chinese medicine [16], mentioned about one thousand plants in his studies in 2500s B.C. Eskulap who is one of the important names of Greek medicine, and Hippocrates who are accepted as the basis of modern medicine told about approximately 400 plant products in their books [17,18]. In the period of Islamic civilization, Abu Rayhan who is the author of the book "Kitab-al Saydalafi al Medicine" mentioning 20 therapeutic plants and whose a copy is in the library of Orhan Gazi and Ibn-i Sina and Al Gafini who wrote "The Law of Medicine" which mentions about 800 animal and herbal treatments and which had been accepted as a reference book until the 1650s, released important studies on the field of herbal medicine [19].

Phytotherapy in today and the developments in the chemistry and biochemistry sciences during nineteenth and twentieth century gave a great impetus to the pharmaceutical industry, and thus many medicines were developed to respond to the needs of medicine in the laboratories by adopting the principles of efficiency, harmlessness and quality, as a result of analytical, toxicological, pharmacological and clinical studies [20]. The 1/2 of the current medicines are herbal-based, and the active substance to be obtained from the plant in most of these is copied in the laboratory [21]. Due to many factors such as medical and economic problems stemming from serious side effects of synthetic drugs in recent years, ecological approaches and acting which increase environmental

pollution and whose creators also include the international pharmaceutical industry and threat posed by many chronic diseases that are not yet curable and the idea that naturalness is always effective and free of side effects, herbal treatment have become popular again [22]. The most reflective indicators of this popularity are that the increase in sale of herbal medicines in the USA at the level of 59% in 1997 compared to the previous year, the 3 to 5% of patients receive only herbal treatment as basic treatment, the 3.24 billion dollars only in the US and 40 million pounds in the UK are spent for these treatments per year and the confidence of the World Health Organization's personnel in natural treatment at the level of 80% [23]. The seven best-selling herbal medicines in the world during the last century are listed below: ginkgo (retail sale price in large American markets is about \$ 150 million dollars), St. John's wort (*Hypericum perforatum*, 140 million dollars), ginseng (\$ 96 million) garlic (\$ 84 million), echinacea (\$ 70 million), saw palmetto (\$ 32 million) and cava (\$ 17 million) [13,24]. Nonetheless, according to the latest warnings from the German Federal Institute for Drugs and Medical Plans and the American Food and Drug Administration (FDA), the relationship between cava (*Piper methysticum* G. Forster) plant and liver injury was determined in three cases of liver transplantation and in a case that resulted in death [25]. The main problem at this point is that millions of people trust plants so much, and this unconscious widespread use as a result of this trust can lead to many problems that endanger public health [26]. Herbal products are often considered safe because they are natural. But, natural is not always safe. According to herbalists, the use of the unpurified plant reduces the likelihood of side effects due to the ineffectiveness of the substances forming the plant [27]. Plants potentially contain many active compounds, and therefore many plants are highly toxic, and the phytotherapy in other complementary treatment modalities carries a much higher risk of side effects and toxicity [28]. Very dangerous and fatal side effects caused by the use of plant products have been reported. These side effects may be due to several different mechanisms. For example; direct toxic effects of the plant, allergic reactions, effects due to contamination, interactions with drugs and other plants [29]. Some studies have shown

that the effect levels of current herbal products vary depending on their bioactive ingredients using in phytotherapy. For example, analysis of 25 different ginseng products commonly using in phytotherapy has shown that the concentration of two groups of substances, ginsenosides and eleutherocytos, known to have biological activity may vary from 15 to 200 times [30]. The 37,500 of the 53,000 substances (36,000 of them are land, 1500 of them are marine plants) examined by the National Cancer Institute for being able to be developed the effective treatment against cancers in the last 10 years are plants, and 40% medicines which were defined between 1983 and 1993 originate from the plants and these constitute 50% of the medicines prescribing in the United States. Additionally, *Hypericum perforatum* preparation is the best-selling prescribed medicinal product in Germany, and this shows that the medical community have confidence in herbal healing [31,32]. Traditional herbal preparations in China constitute 30-50% of the total medical consumption [33]. All these narratives make the necessity to investigate the effects of medicinal plants, which have become a sector in the world, by scientific methods.

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