Potential of pharmaceutical herbs in the economic development of the underdeveloped areas in Iran

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ABSTRACT

Farms and garden plants are damaged by environmental changes; consequently the products are severely reduced. However, the effective ingredients of pharmaceutical plants, on the contrary to the farms and garden plants are increased under the influence of environmental tensions. In other words, the economic efficiency of pharmaceutical substances in medicinal herbs is increased by harsh environmental conditions. In this regard, the areas such as ecotone (tense) points in Baluchistan, NoorAbad Mamassani, Shahdad, Khamrut and Vameqabad Kouhpayeh in Kerman, Nashlaj in Kashan, Birjand in south Khorasan and the desert areas in Yazd. Although these areas are among the low-production land, the active ingredients of plants such as fleawort, silybum marianum, henna, asafetida, licorice, galbanum, jujube and lynx (Vosha) sharply increase.

KEY WORDS: medicinal herbs, tensions, ecotone points.

INTRODUCTION

Across the plains and mountains of Iran is covered with incredible diversity of plant species (approximately two times as that in Europe); accordingly some experts consider Iran as a repository of pharmaceutical and aromatic plants. However, this claim does not mean to directly use herbs in nature for several reasons including the following. Direct use of herbs in nature not only accelerates the destruction of the natural resources of ingredients in medicinal herbs, but also causes severe fluctuations in the quantity and quality of the mentioned substances. Therefore, it is now essential to cultivate medicinal herbs required for pharmaceutical industry based on land use planning.

The flavonoids of silybum marianum are used to treat liver diseases, the sap of ferula gumosa is used to produce the invisible adhesives to glue diamond, and also its essential oil is used in perfume industry as a stabilizer. Lowsonia inermis and the dye in its leaves are widely used in the cosmetic industry. The sap of dorema ammoniacum and ferula assa–foetida is widely used in the industries of western countries. The effective ingredients in glycyrrhiza glabra are widely used in soft drink and confectionery industries.

This study, conducted in some low productivity and ecotense climates of the country, aimed to investigate the density of pharmaceutical plants and the amount of their effective ingredients so as to examine the hypothesis of plant ingredients in the low productivity areas, and based on the information obtained from those models, restructure farm conditions and grow medicinal plants which under their effect and ultimately provide those areas with increased employment.

MATERIALS AND METHODS
In this study, the density of the medicinal plants was measured after identifying the target areas. The density of each species in the region was measured by counting it in three-square-meter plots. The main plant coverage in Noorabard Mamasani was silybum mariaum. The other studied areas were Khamroot, Shahdad and Poshtkouh in Kerman Province with major coverage of ferula assa-foetida, lowsonia inermis and glycyrrhiza glabra, respectively. Ferula gumosa was studied in Nashlaj in Kashan. Dorema amoniacum and zizyphus jujuba were studied in Yazd and Birjand. Silymarin was extracted by alcohol, and silybin was measured by HPLC. The amount ferul aassa – foetida sap, dorema amoniacum and ferula gumosa was measured in crucible after extraction. Ferula gumosa essential oil was extracted through water/steam distillation. The ingredients of ferula gumosa essential oil were detected by GC / MS and GC. Lowsena inermis was extracted by hexane. The biomass of glycyrrhiza glabra root was measured in each crucible.

**Findings and Discussion:**

The results showed that plants had appropriate density in the study area. In Noorabard Mamasani pastures, the density of silybum mariaum was 33,000 plants per hectare. The measurements showed that the amount of silymarin and silybin in the seeds of silybum mariaum was 98.1% and 48.6%, respectively. These values are not significantly different from those of the corrected figures. The density of glycyrrhiza glabra was 40,000 plants per hectare and dry root yield per plant was estimated about 6 kg. In the above areas, the density of ferula gumosa, dorema amoniacum and ferula assa-foetida was estimated 12000, 15000, 17000 per hectare, respectively, and the average amount of sap was calculated 60, 35 and 55 grams per plant, respectively. The amount of essential oil was 17% in ferula gumosa and about 120 compounds were detected in it. Lowsonia inermis had a good quality.

The short period of growth and reproduction is an important characteristic of jujube for adaptation with the climatic conditions of the region. It sprouts when all the trees wake in spring and its fall begins when trees are still green.

The other feature of jujube is its resistance to frost in the late cold of spring and early cold of fall, while these tensions incur remarkable losses to most products in the region each year. Therefore, periodic tensions in plants growing in ecotone regions cause metabolic secretions (pharmaceuticals). Thus, it is recommended that small businesses be established to extract active ingredients of plants and to sell them with added value, rather than indiscriminate harvesting of plant parts with active ingredients and selling them at very low prices.

**Recommendations:**

1. It is recommended that in areas densely populated with ferula gumosa, essential oil distillation machine be set up, so the sap can be extracted and sold to the perfume industries. Also, the remaining sap can be used to produce the invisible glue.

2. It is recommended that lowsonia inermis be cultivated at a larger scale in Shahdad, Kerman to produce cankrat from lowsonia inermis flower, not only to eliminate the needs of domestic industry, but to export it, and create a good source of income for the region.

3. It is recommended that extracting units of glyciricic acid from glycyrrhiza glabra root be set up in Vameghabad of Kouhpaye in Kerman, so glycerizic acid can be produced and sold at a great value. By producing glyceric acid in the region, other industries such as pastry, chocolate, and fire-extinguishing industries that use glycerizic acid can be established.

4. Proper studies need to be conducted on the sap of dorema amoniacum and ferula assa-foetida to realize the economic value and establish the processing industry to extract the effective ingredients and their technology.

5. In silybum mariaum -rich pastures in Noorabard Mamasani, small industries can be established to extract the seed oils and use them in cosmetic industry, or extract and process flavonoids for production of subspecialty drugs for liver diseases.

Given the above, and by building small industries in these regions, which are located mainly throughout the country, we can not only produce the raw materials and final products, but also take major steps to boost the economy and revenues in this areas.

**REFERENCES**


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