

Full Length Research Paper

Medicinal plants of Azerbaijan flora used in the treatment of certain diseases

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During investigations conducted within two years (2007 - 2009) 30 natural cenopopulations that were found, confirmed medicinal plants that can be used in the treatment of pediatric diseases. It was systematically studied life forms and distribution of 50 families, 94 genera and 97 species of medicinal plants widely spread in Azerbaijan flora which are used in the treatment of pediatric diseases. It was determined that the majority of medicinal plants contains grasses (71%, 69 species). Among them, perennials are characterized with the highest number (48 species, 49.5%), annuals with medium (12 species, 12.4%) and biennials with the least number (9 species, 9.3%). Profoundly described plant resources and role in the medicine of species such as, *Berberis vulgaris*, *Crataegus pentagyna*, *Althaea officinalis*, *Hippophae rhamnoides*, *Inula helenium*, *Vaccinium myrtillis* and *Vaccinium vitis idaea* detected and confirmed the area of distribution of medicinal plants, their vegetation phase and collected parts with priorities used in the treatment of pediatric diseases.

Key words: Medical plants of Azerbaijan flora, systematic analysis, plant resources, pharmacological effect.

INTRODUCTION

Plant species of Azerbaijan flora have always attracted attention of researchers, botanists, ecologists and phytotherapists because of its richness in essential oils, vitamins, alkaloids, tannins and other biological active substances. However, medicobiological features of these medicinal plants have not been studied completely yet.

Unfortunately, while 365 plant species were utilized in the Middle Age Azerbaijan medicine, in modern Azerbaijan medicine 135 of them are not in use and they are considered as lost medicinal plants for new generations. From approximately 4500 plant species (Azerbaijan Flora, 1950, 1961), only 1500 plant species which belong to 150 families, 1000 genera were considered as medicinal plants. In the country 25 plant species are laid in as raw material. Evidently, in spite of the richness of plant resources of the country, they are not utilized efficiently.

The diversity of physics-geographical condition of Azerbaijan, complex geo- morphological structure, historical development of plant cover, physical and anthropological influences is caused by floral diversity. Medicinal,

aromatic and food plants of Azerbaijan flora are studied several times due to these changes.

From the beginning of 2003, the medicinal plants of Azerbaijan flora were inventoried and the computer data base was created. From existed 1500 medicinal plants out of 700 were added to the computer data base and seeds of 200 plant species are conserved in National GenBank in Genetic Resources Institute of ANAS.

METHODS

For precise studies of spread species, certain territories were marked and 15 - 20 examples were selected and taken picture of them. It has been used different systems for studying of plants life forms (Raunkier, 1937; Serebryakov, 1964). Vegetation phase and collected parts of plants with priorities used in the treatment of diseases (Demirov et al., 1988; Turova et al., 1984) learnt. Methods implemented by Zayko et al. (2007), Krylova (1971) were used during the study of plant resources.

RESULTS AND DISCUSSION

The results of our research for a period of two years (2007 - 2009) are shown in Table 1. Systematically

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Table 1. Systematic analysis of studied medicinal plants.

| Division | Families | | Genera | | Species | |
|---------------------|----------|------------------------|--------|------------------------|---------|------------------------|
| | Number | With % on total number | Number | With % on total number | Number | With % on total number |
| Higher sporophytics | 3 | 6 | 3 | 3.2 | 3 | 3.1 |
| Pinaceae | 2 | 4 | 2 | 2.1 | 2 | 2.1 |
| Angiospermae | 45 | 90 | 89 | 94.7 | 92 | 94.8 |
| Monocotyledoneae | 5 | 10 | 5 | 5.3 | 5 | 5.2 |
| Dicotyledoneae | 40 | 80 | 84 | 89.4 | 87 | 89.6 |
| Total | 50 | 100 | 94 | 100 | 97 | 100 |

Table 2. Comparative analysis of the number of the leading families, genera and species of medicinal plants in *ex situ* situation

| Families | Genera | Species |
|--------------------|--------|---------|
| | Number | Number |
| Asteraceae Dumort | 11 | 12 |
| Rosaceae Juss. | 10 | 11 |
| Lamiaceae Lindl. | 9 | 9 |
| Apiaceae Lindl. | 6 | 6 |
| Fabiaceae Lindl. | 3 | 3 |
| Brassicaceae Endl. | 3 | 3 |
| Moraceae Link. | 2 | 2 |
| Malvaceae Juss. | 2 | 2 |
| Papaveraceae Juss. | 2 | 2 |
| Polygonaceae Juss. | 2 | 2 |
| Fagaceae Dumort | 2 | 2 |

Table 3. The life forms of studied medicinal plants.

| Life forms | Number of species | With % on total number of species |
|----------------|-------------------|-----------------------------------|
| 1. Perennials | 48 | 49.5 |
| 2. Annuals | 12 | 12.4 |
| 3. Biennials | 9 | 9.3 |
| 4. Trees | 10 | 10.3 |
| 5. Shrubs | 10 | 10.3 |
| 6. Half-shrubs | 8 | 8.2 |
| Total: | 97 | 100 |

analyzed and determined 97 medicinal plant species which belong to 94 genera and 50 families. The life forms of species were determined plant resources, their density, their role in plant groupings and the whole botanical descriptions were included during the study.

Comparative analysis of the number of the leading families, genera and species of medicinal plants was carried out (Table 2). It should be noted that, natural condition of the studied area reflects the systematic

composition in the flora, but its ecological condition indicates the composition of phytocenoz, dominants and life forms. Taking into consideration the biomorphological features and their evolution, the ecological classification of life forms were studied. According to this classification, the life forms of medicinal plants which are studied in regional flora were shown in Table 3.

It was determined that the majority of medicinal plants contains grasses (71%, 69 species). Among them,

Table 4. Annual resources of some medicinal plants of Azerbaijan flora for a period of two years (2007 - 2009).

| Name of species | Regions | Distributed area (hectare) | Organs used as a drug | Biological resources (t) | Exploitation resources (t) |
|-----------------------------|----------------|-----------------------------------|------------------------------|---------------------------------|-----------------------------------|
| <i>Crataegus pentagyna</i> | Beylagan | 65.6 | Fruit | 7.87 | 6.96 |
| | Zagatala | 467.3 | " | 65.90 | 52.72 |
| | Gakh | 59.7 | " | 6.78 | 5.42 |
| | Shaki | 400 | " | 22.60 | 18.08 |
| | guz | 280 | " | 7.56 | 6.05 |
| | Gabala | 625 | " | 29.67 | 23.73 |
| | Total: | 1897.6 | | 140.382 | 112.96 |
| <i>Inula helenium</i> | guz | 83.62 | Root | 28.80 | 9.60 |
| | Beylagan | 4082 | " | 27.00 | 9.00 |
| | Zagatala | 5000 | " | 210.00 | 70.00 |
| | Gakh | 221.3 | " | 102.00 | 34.00 |
| | Shaki | 76.5 | " | 183.60 | 91.20 |
| | Gabala | 193.2 | " | 55.40 | 19.10 |
| | Total: | 9656.62 | | 606.20 | 266.90 |
| <i>Hippophae rhamnoides</i> | Zagatala | 50 | Fruit | 3.03 | 3.03 |
| | guz | 10 | " | 18.00 | 18.00 |
| | Total: | 60 | | 21.03 | 21.03 |
| <i>Vaccinium myrtillus</i> | guz | 70 | Leaves | 0.63 | 0.06 |
| | Zagatala | 72 | " | 1.46 | 0.14 |
| | Gakh | 141 | Fruit | 2.11 | 0.21 |
| | Total: | 283 | | 4.20 | 0.42 |
| <i>Berberis vulgaris</i> | guz | 5.70 | Fruit | 0.71 | 0.71 |
| | Shaki | 200 | " | 2.50 | 2.50 |
| | Total: | 205.70 | | 3.21 | 3.21 |
| <i>Altheae officinalis</i> | Zagatala | 50 | Root | 1.48 | 0.94 |

perennials are characterized with the highest number (48 species, 49.5%), annuals with medium (12 species, 12.4%) and biennials with

the least number (9 species, 9.3%). The medical features of plants were studied by investigators. Studies demonstrated the area of distribution of

medicinal plants, their vegetation phase and collected parts (Table 4) and their efficacy in the treatment of pediatric diseases (Table 5).

Table 5. Vegetation phase and collected parts of plants with priorities used in the treatment of below mentioned diseases.

| Medicinal plants | Blossom and seed phase | Medically important parts of the plant | Used in the treatment of diseases |
|------------------------------|-------------------------------|---|---|
| <i>Berberis vulgaris</i> | IV-IX | Leaves, root, grass and fruits | Rickets, anaemia, tonsillitis, malaria, arthralgia, icterus, gastrointestinal diseases, antitussive |
| <i>Crataegus pentagyna</i> | V-IX | Fruits and flowers | Has a chronotropic and positive inotropic effect on heart muscle, improves heart and brain circulation, used in the treatment of arrhythmia, tachycardia and hypertension |
| <i>Althaea officinalis</i> | VII - IX | Root | Respiratory tract infections, gastric ulcer, diarrhoea, acute gastritis, cystitis, quinsy |
| <i>Hippophae rhamnoides</i> | III-X | Fruits | Trophic sores, moniliasis, respiratory tract infections, skin tuberculosis, cancer |
| <i>Inula helenium</i> | VII-X | Root and rhizome | Gastrointestinal diseases, gastric and small bowel diseases, common cold, bronchitis, antihelminthic, antitussive |
| <i>Vaccinium myrtillus</i> | VI - VIII | Leave and berries | Nocturnal enuresis, arthralgia, gastritis, chronic tonsillitis, moniliasis, deformation of joints, dysentery, enterocolitis, acute and chronic gastroenteritis |
| <i>Vaccinium vitis idaea</i> | V-IX | Leave and ripen fruits | Liver diseases, gastritis with low acidity, rheumatoid arthritis, nocturnal enuresis, diarrhoea, antihelminthic |

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