



A top-down view of various medicinal plants and herbs. In the foreground, a fresh green herb branch with small flowers lies across the frame. To its left is a brass scale with a circular weighing pan. Several wooden bowls are arranged around the scene, containing different types of dried botanicals: purple flowers, blue and yellow flowers, dark seeds, green dried leaves, and white flowers. The background is a dark wooden surface.

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Medicinal Plants and Traditional Medicine

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I. History and Background

Given the growing interest in the use of natural products of medicinal and food industries in the global healthcare debates, Iranian people, officials, and industries have increasingly considered the benefits of medicinal herbs and significance of integrating traditional medicine into modern healthcare system and supporting it. Iran enjoys 8000 herb species, 2500 species with medicinal properties and applications as spice, fragrance, and cosmetics, and has a rich heritage of traditional medicine with over 14000 reference books and elegant works such as Avicenna's Canon of Medicine and Book of Healing, Al-Razi's Al-Havi, and Zakhireh-i Kharazmshahi. Hence, the urgency of extensive fundamental measures for developing this area now is quite obvious. Recognizing the importance of medicinal plants and traditional medicine and in line with global trend, the Islamic Republic of Iran has launched a range of systematic measures for better exploitation of this realm.

II. Policies and Objectives

Major policies and objectives for development of medicinal plants based on the national document of medicinal plants and traditional medicine and other upstream documents are as follows:

A. Macro Level Policies

- Reviewing, reforming, simplifying, and updating the related laws, regulations, and standards in this area;
- Organizing and determining the borders of traditional medicine in health, education, and research system;
- Developing international scientific and technological cooperation in this area;
- Developing and organizing services including producing, distributing, marketing, exporting and commercializing scientific and technological achievements in medicinal plants;
- Providing effective support for fundamental, developmental, and applied research priorities in this area.

B. Macro Level Objectives

- Gaining 20% of pharmaceutical market value of the country by approved products with a herbal medicine origin and natural products, and 10% of health market value by products produced based on traditional medicine principles, and 2% of pharmaceutical market value by approved products with herbal origin;



- Gaining 4% of pharmaceutical market value by products produced based on principles of traditional medicine including six essential health principles of Iranian traditional medicine¹;
- Increasing export of medicinal herbs, medicinal herbal-based products and herbal products to join the top 10 countries;
- Gaining 3% of world science production in the field of medicinal herbs and medicinal herbal-based products;
- Obtaining 1% of the world patents in the field of medicinal herbs and the related products;
- Registering and supporting all types of endemic and/or endangered species of medicinal plants through national conservation systems;
- Decreasing formal and informal harvesting on public lands to 200,000 hectare in Vision 2025;
- Increasing the areas under cultivation of medicinal plants and fragrant plants to 500,000 hectares in Vision 2025;
- Improving insurance coverage rate to 30% out of pocket expenses in the field of traditional medicine;
- Improving society's health through developing traditional medicine and enjoying a holistic attitude and principles of health care;
- Gaining the first rank of the region in terms of meeting health and medical needs in the traditional medicine area and increasing export of services, technical knowledge, and natural and herbal products up to 20% of the medical services export of the country;
- Increasing annual patent applications to 50 patents in 2025 in the scope of traditional medicine products.

III. Capacities and Capabilities

A. Human Resources

I.R. Iran has successfully accomplished to increase the number of workforces in the field of medicinal plants and traditional medicine since 2008; this includes significant increase in the number of faculty members, research scholars, students and vocational trainees of the traditional medicine, traditional pharmacy and all related fields of study. Iran has already created a number of entrepreneurial packages since the foundation of the committee and intends to rise the number of such packages to 45 items in 2015 (See table 1).

1. "life environment", "food", "spiritual status", "physical activity", "sleeping and awaking", "excretion and retention"

Table 1*The Number of Human Resources in Medicinal Plants and Traditional Medicine in 2015*

Topic	Index	2015
Education and Human Resources	Traditional Medicine Faculty Members	87
	Traditional Pharmacy Faculty Members	20
	PhD Students of Traditional Medicine	429
	PhD Students of Traditional Pharmacy	65
	PhD Graduates of Traditional Medicine	69
	PhD Graduates of Traditional Pharmacy	15
	Pharmacognosy (specialized PhD program) Faculty Members	37
	PhD and Master Students of History of Medicine in Iran	68
	PhD Research Scholars in Medicinal Plants	510
	Students in all Levels of Medicinal Plants	6000
	Vocational Trainees in the Related Fields of Technology (Public and Private Sectors)	3913
	Entrepreneurial Packages	20

B. Current Status

- Over 150 knowledge-based enterprises in medicinal plants, herbal medicines, natural products, and traditional medicine;
- Manufacturing and commercializing more than 450 knowledge-intensive products of natural human and animal origin;
- Developing over 400 enterprises in the areas of medicinal plants, herbal medicines, natural products, and traditional medicine;
- Increasing licensing and manufacturing natural human and animal products and medicines up to 1600 items;
- Enriching scientific production in medicinal plants including 3800 research articles indexed in ISI's Web of Knowledge;
- Promoting Iran's scientific production rank in medicinal plants;
- Increasing the number of traditional medicine and traditional pharmacy colleges to 8 ones;
- Implementing 5 stages of comprehensive plan including identification, comparison, emendation, translation, and compilation of written medical works including traditional medicine texts.
- Recruiting more than 100 faculty members in traditional medicine colleges and admission of over 500 students in different programs of traditional medicine and traditional pharmacy;
- Establishing over 20 healthcare centers for traditional medicine by early 2016;
- Over 6000 students in the related fields of medicinal plants in all levels (undergraduate, graduate, postgraduate);
- Improving and developing gene bank of endemic or endangered medicinal plant species and conserving 1400 herbal species;
- Completing studies of commercial domestication and cultivation of over 70 species and varieties of medicinal plants;

- Preparing master atlas of medicinal plants for recording the benefits of plants and conserving plant species at a scale of 1:250,000 in the country;
- Identifying and registering information related to phytopathology and distribution of 2300 species of the country's flora;
- Compiling 20 entrepreneurial packages for medicinal plants and natural products;
- Compiling job standards including 134 job titles in 7 main parts of value chain.

C. Some Achievements

• HESA-A

HESA-A is a coated tablet with natural origin of lobster, caraway and celery. The drug can reduce pain, increase appetite, modify and control liver enzymes and distant metastasis.

HESA-A is used for treatment of metastatic cancers of liver and bile ducts, hematoma, intestinal and colon cancers, breast cancer, urogenital cancers, sarcomas, and carcinomas. HESA-A is contraindicated in cases where the patient has a history of gallstones with liver origin and varicose esophagus and stomach bleeding or large open wounds. In such cases, caution in use is essential and should be administered under direct medical supervision.



• SaffroMood

SaffroMood, an herbal anti-depressant, is a gelatin capsule containing 150 mg dried standardized extract of saffron (quantified by input) mixed with vitamin B6. Passing successful clinical trials, SaffroMood is now commercially produced.

Using this Iranian study, a French company produced Saframyl antidepressant for the first time in 2008 which has been registered in the European Pharmacopoeia and introduced to the pharmaceutical market.

• Avishit Barij Solution

Avishit Barij Solution which consists of thyme essential oil is provided for treatment and prevention of fungal infections of farmed fish, particularly fish eggs. This herbal combination is a good alternative to chemical compounds with many environmental and human risks.

Avishit Barij should be used for prevention, control, and treatment of fungal contamination of eggs in rainbow trout and sturgeon at a dose of 50 ppm for 1 hour after gastrulation.



• Varroicide

Varroicide is an herbal-based anti-varroa drug with anti-parasitic properties. Varroicide is a 100% herbal drug which contains active ingredients of thyme, lavender, and some other medicinal plants. Its most important active ingredients are phenolic compounds such as thymol, carvacrol, and linalool.

Since Varroicide and food of honey bees both have herbal origins, this drug -with no side effects for human and bees- is also of great significance for honey quality and food hygiene.



• Calendula Officinalis

Calendula ointment contains 1.5% calendula officinalis extract and is used for treatment of skin lesions such as allergic dermatitis, prevention and relief of skin irritation due to radiation treatment, skin injuries including scratches, cuts, and dry and cracked skin, prevention and treatment of sunburn, and alleviation of the itch and inflammation from insect bite.

• Dentol

Dentol is a dental drop formulated based on studies on an Iranian endemic plant (Savory of Khuzestan). Dentol contains 10% carvacrol effective in relieving pain and eliminating infection of decayed teeth. This drug is very fast acting and has been internationally marketed.



• Livergol

Each coated Livergol tablet contains dried milk thistle (*Silybum marianum*) formulated in two dosages of 70 and 140 mg Silymarin. Livergol is used for protection of liver, inducing bile, treatment of acute and chronic hepatitis, fatty liver, and cirrhosis, and reducing toxicities of anticancer drugs.



• Opiucough

Opiucough is an herbal-based anti-cough syrup containing compounds purified from noscapine, sundew (*drosera*), licorice, eucalyptus, and peppermint. It is administered in treatment of dry and productive coughs, improving breathing, and reducing lower respiratory tract problems.

• Aftogel

Aftogel oral patch contains standardized extract of licorice root (*Glycyrrhiza glabra* L.). Aftogel contains 18.0 mg pyrogal-based polyphenols. It is used for treatment of stomatitis, thrush and mouth sores, and chemotherapy-induced oral mucositis. This drug is patented in Iran and U.S.A as well.



• Urtica ZB

Urtica syrup is formulated using active ingredient of *urtica dioica*. Urtica is prescribed in treatment of kidney stones, reduction of inflation and urinary tract infections.



• **Recubizul® Shampoo**

Know.Tech.Pharm. Pharmaceutical Co., in compliance with documentations available in scientific sources, primarily took step to produce Recubizul ointment, and finally the formulation and production of Recubizul® Shampoo was realized with the usage of effective ingredients of German chamomile flowers. In addition, the effective ingredients of calendula flowers (with scientific name *Calendula officinalis*) have been used in this shampoo to obtain an agreeable scent and anti-inflammatory effect.

Recubizul® Shampoo can be used for cases of inflammation such as eczema, hives, urine-burn in babies and all other types of spread and non-spread inflammation on the head, body and of superficial wounds and burns on body. It also provides care for sensitive and inflammatory skin.

IV. Authorities

A. Committee for Development of Science and Technology of Medicinal Plants and Traditional Medicine

The Committee for Development of Science and Technology of Medicinal Plants and Traditional Medicine was established in 2008 by the Vice-Presidency for Science and Technology. This committee, as the coordinating and integrating unit for all players in medicinal plants and traditional medicine of the country, is designed to realize cross organizational collaboration and interaction of all stakeholders so that pre-defined targets would be fulfilled. The “National Document of Medicinal Plants and Traditional Medicine” prepared based on a 20-year-vision plan and the comprehensive scientific map of the country, and was presented to the steering committee of the comprehensive scientific map in the Supreme Council for Cultural Revolution (SCCR), that was accordingly ratified and proclaimed by the council in 2013. More than 300 scholars, managers, and players in the area have participated in preparing this document.

B. Other Authorities

A variety of actors from different parts of the government, policymakers, and non-governmental organizations somehow influential in advancement of science and technology of medicinal plants and traditional medicine are actively collaborating with the Committee for Development of Science and Technology of Medicinal Plants and Traditional Medicine. Some of these authorities and actors include:

The General Office for Monitoring and Evaluation of Natural Products and Supplements associated with Food and Drug Administration; Deputy for Traditional Medicine associated with Ministry of Health and Medical Education; Institute of Medicinal Plants of Jihad University (ACECR); Ministry of Agriculture and its affiliated organizations and institutions; Directorate General of Food, Medicine, and Hygiene Industries of Ministry of Industry, Mine and Trade; Technical and Vocational Training Organization; Ministry of Cooperatives, Labor and Social Welfare; the National Network of Research and Technology of Medicinal Plants; Deputy for Life Sciences of Presidential Center for Innovation and Technology Cooperation (CITC); and Deputy for Research and Technology of Ministry of

Science, Research and Technology.

Moreover, around 120 universities, scientific and research institutions and organizations of science and technology of medicinal plants and traditional medicine contribute to the development of this area.

V. International Cooperation

International cooperation can be persuaded in the following fields:

- To develop medicinal plant and natural product export as well as science and technology transfer required for advancement of this area.
- To coordinate mutual visits to industrial companies in the most advanced countries in this area.
- To transfer know-how and the required equipment to improve quality of the knowledge-based products.
- To develop co-branding and international standards to facilitate export development.
- To sign international agreements in an attempt to establish technology commercialization offices in the target countries.