

## STRUCTURAL STUDIES ON MEDICINAL PLANTS ON HEALTH

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### Abstract

Curative plants are also called 'Medicinal Herbs' have been discovered and used in traditional medicine practices since prehistoric times. Plants synthesis hundreds of chemical compounds for functions including defense against insects, fungi, diseases and herbivorous mammals. Numerous phytochemicals with potential biological activity have been identified. However, since a single plant contains widely diverse phytochemicals, the effects of using a whole plant as medicine are uncertain. Further, the phytochemical content and pharmacological actions, if any, of many plants having medicinal potential remain unassessed by rigorous scientific research to define efficacy and safety. Medicinal plants are widely used in non-industrialized societies mainly because they are readily available and cheaper than modern medicines.

**Keyword:** Economic plants, Essential oil, Native origins.

Medicinal plants are various plants used in herbalism and thought by some to have medicinal properties. Few plants or their phytochemical constituents have been proven to have medicinal effects by rigorous science or have been approved by regulatory agencies such as the United States Food and Drug Administration or European Food Safety Authority.

The articles is the study of medicines derived from natural sources, including plants. The American Society of Pharmacognosy as "the study of the physical, chemical, biochemical and biological properties of drugs, drug substances or potential drugs substances of natural origin as well as the search for new drugs from natural sources."

### *The Tropics in World Trade*

Plant products like those just mentioned are often referred to as "commodities" or "cash crops." Unlike many exports from the industrialized economies, commodities are usually exported in minimally processed states as raw materials. Whether tropical nations should continue to rely extensively on these exports to fuel their emerging economies is a hotly debated subject, with critics maintaining that overproduction depresses world prices of these materials and diverts arable land from food production for local markets. Regardless, patterns of trade in commodities are not likely to change significantly in the near future.

### ***Trade vs. Environmental Concerns***

As tropical nations seek to increase their share in the world marketplace, a key question is the best way to balance these strategies with the needs to conserve and manage remaining forested areas. Indiscriminate harvesting techniques and clearing large tracts for cultivation or ranching have been all too characteristic of the past.

The future will require more appropriate means of extracting plants or their products if we are not to lose the many thousands of other tropical species holding genetic "blueprints" important to our future. This will require strong international leadership on economic and environmental fronts and, for all citizens of the world, a willingness to rethink our use of the Earth's resources.

### **Economic Plants**

Economic plants are defined as being useful either directly, as in food, or indirectly, as products we use or that enhance the environment. Plants are essential to life on earth; they produce the oxygen we breathe through, photosynthesis and provide much of the food we eat.

Our daily dependence on plant products of tropical origin is astounding. For instance, Latin America and Africa are major suppliers of coffee and cacao (from which we derive chocolate), while Asia produces most of our rice and natural rubber. Our lives are enriched by beautiful hardwoods, spices, essential oils and fruits. In addition, tropical countries export many fibers, gums, resins, dyes, and plant essences that we may never see directly, but which are widely used in medicine and industry. This section highlights some of these important plants.

### ***Native Origins of Economic Plants***

Plants listed below are native to these regions. Many are now grown in other areas of the tropics also.

### **Essentials Oils**

Essential oils, or volatile oils, are found in many different plants. These oils are different from fatty oils because they evaporate or volatilize on contact with the air and they possess a pleasant taste and strong aromatic odor. They are readily removed from plant tissues without any change in composition. Essential oils are very complex in their chemical nature. The two main groups are the hydrocarbon terpenes and the oxygenated and sulphured oils.

These oils do not have obvious physiological significance for the plant. They may represent by products or metabolism rather than foods. The characteristic flavour and aroma that they impart are probably to some advantage in attracting insects and other animals, which play a role in pollination or in the dispersal of the fruits and seeds. When in high concentration, these same odors may serve to repel enemies of the plants.

The oils may also have some antiseptic and bactericidal value. There is some evidence that they play an even more vital role as hydrogen donors in oxidoreduction reactions, as potential sources of energy, or in affecting transpiration and other physiological process (Hill 1952).

All the distinctly aromatic plants contain essential oils. They occur in over 60 families and are especially typical of the Lauraceae, Myrtaceae, Umbelliferae, Labiatae and Compositae. The quantity of oil varies from a very small amount to as much as 1-2 percent. The oils are secreted by internal glands or in hair like structures. Sometimes, as in wintergreen and mustard, the oil is not present in the plant but develops only as the result of chemical action when the ground-up plant tissue is extracted with water. Almost any organ of a plant may be the source of the oil. Examples are flowers (rose), leaves (mint), fruits (lemon), bark (cinnamon), wood (cedar), root (ginger) or seeds (cardamom), and many resinous exudations as well.

These oils are extracted from the plant tissues in different ways depending on the quantity and stability of the compound. Three principal methods are: expression, distillation and extraction by solvents.

### ***Perfumes***

The history of civilization is directly connected with that of perfumes. Perfumes have been in widespread use since the earliest recorded times. The Egyptians and ancient Hebrews used them for both personal and religious purposes. They played an important role in the life of the Romans and Greeks, reaching such a high degree of specialization with the Greeks that a special perfume was required for each part of the body. Later Catherine de' Medici knew as much about perfumes as she did about poisons. In the time of Queen Elizabeth, a gift of rare perfumes was a definite way to win the royal favour, while the court of Louis XIV at Versailles had a particular perfume for each day of the year, the preparation of which was supervised by the king himself.

In those days' perfumes were of hygienic as well as aesthetic value for they acted as true antiseptics and deodorants and masked offensive odors at a time when bathing was infrequent. Perfumes have continued to be in great demand to the present day. The consumption of the natural products has gradually increased in spite of the many synthetic substitutes that chemists have placed on the market. Synthetics are not as long lasting as those obtained directly from the plants.

The most valuable perfumes are combinations of several essential oils. Frangipani, for example, contains sandalwood, sage, neroli, orris root, and musk, while one of the formulas for Eau de Cologne, which dates from 1709, calls for neroli, rosemary, lemon and bergamot dissolved in pure alcohol and aged. "The expert perfumer must be able to blend the several

oils at his command as an orchestra leader combines the various instruments into a perfect whole” (Hill 1952).

Perfumes also contain fixatives, which are substances that are less volatile than the oils and which delay and so equalize evaporation. These may be of plant or animal origin. Musk, ambergris, and civet are frequently used for this purpose. Balsams and oleoresins, such as benzoin, styrax, and oak moss; essential oils with a low rate of evaporation like orris, patchouli, elary sage, and sandalwood; and various synthetic materials are also used.

Perfume plants are cultivated for the most part in areas bordering on the Mediterranean Sea and the Indian Ocean. Most of the natural perfumes are made in southern France in the region around Grasse and Cannes near the French Riviera. Here garden flowers are cultivated on a large scale, and form 10-12 billion pounds were being gathered annually by the mid 1950's. These included over 5 million pounds of orange blossoms, over 4 million pounds of roses, 440 thousand pounds of jasmine and 330 thousand pounds of violets. Large quantities of tuberose, cassie, jonquils, thyme, rosemary, lavender and geraniums are grown and many other fragrant species to a lesser degree. Flowers are also grown for the perfume industry to some extent in Reunion, North Africa, England and various European, Pacific and Asiatic areas. When supplies were reduced during World War II, the United States developed substitutes and initiated or increased the cultivation of several essential oil plants in Central America. Of the 75 essential oils regularly used in the industry only eight are normally produced in the Western Hemisphere, and only oil of petitgrain is of much importance.

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