



Herbal Medicine and Biodiversity: Preservation of Endangered Plants through Sustainable Harvesting

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DESCRIPTION

Herbal medicine has been an essential part of human healthcare for centuries, with plants serving as the basis for countless remedies. From ancient civilizations to modern times, humans have depended upon the healing properties of plants to treat chronic diseases and to maintain overall wellness. However, as demand for herbal medicine grows, the ecological impact of harvesting medicinal plants has become a significant concern. Over-harvesting, habitat destruction and climate change has placed many plant species at risk of extinction. Biodiversity contains the variety of life forms on Earth, which is essential for maintaining ecosystem balance and resilience. It supports ecological functions such as pollination, water purification and soil fertility. Plants particularly medicinal species, plays an essential role in human health, providing resources for pharmaceutical drugs, nutritional supplements and traditional remedies. Many plants used in herbal medicine are found in specific ecosystems and have evolved over thousands of years to adapt to local conditions. However, as human populations increase and demand for herbal products rises, many of these plants face the threat of extinction due to unsustainable harvesting practices.

A growing global market for herbal medicine has intensified the pressure on plant species, particularly those that are wild-harvested. According to the World Health Organization (WHO), approximately 80% of people in developing countries rely on traditional herbal remedies and the market for medicinal plants is valued at billions of dollars. Some of the plants used in herbal medicine such as ginseng, echinacea and goldenseal have been decreased in the wild due to over-exploitation. In many cases, these plants are harvested faster than they can regenerate, leading to a depletion of natural populations.

For instance, ginseng (*Panax ginseng*), a well-known herb in traditional Chinese medicine, has become increasingly endangered due to over-harvesting in the wild. The root of the

plant is valued for its adaptogenic properties and is used to treat a variety of conditions from stress to immune support. As wild populations of ginseng have decreased, the demand for cultivated ginseng has grown, leading to an expansion of ginseng farming. While farming may provide an alternative to wild harvesting, it can also cause harm to biodiversity if not managed sustainably, as it can reduce genetic diversity and alter natural ecosystems. The consequences of over-harvesting extend beyond the loss of individual species. The depletion of medicinal plants can disrupt local ecosystems and the traditional knowledge systems associated with their use. Over-exploitation of these plants can decrease their availability, as well as impact the livelihoods of those who depend on them.

The cultivation of medicinal plants in controlled environments, such as herb farms or botanical gardens, which can reduce the pressure on wild populations. Cultivation allows for the controlled propagation of medicinal plants and can help preserve genetic diversity. For example, the cultivation of ginseng has helped reduce the need for wild harvesting, although it is important to ensure that cultivated plants maintain the same medicinal properties as their wild counterparts. Sustainable farming practices, such as crop rotation, organic farming and agroforestry can also help to minimize environmental impact and maintain ecosystem health. In addition to sustainable harvesting and cultivation, there is a need for conservation programs aimed at protecting endangered medicinal plants in the wild. Efforts to conserve medicinal plants often involve habitat protection, reforestation and the establishment of protected areas where plants can grow and thrive without the threat of over-exploitation. The Convention on International Trade in Endangered Species (CITES) plays an essential role in regulating the international trade of endangered species, including medicinal plants. By listing vulnerable plants on CITES, countries can work together to ensure that these plants are not harvested or traded illegally.

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Received: 23-Oct-2024, Manuscript No. BLM-24-27600; **Editor assigned:** 25-Oct-2024, PreQC No. BLM-24-27600 (PQ); **Reviewed:** 08-Nov-2024, QC No. BLM-24-27600; **Revised:** 15-Nov-2024, Manuscript No. BLM-24-27600 (R); **Published:** 22-Nov-2024, DOI: 10.35248/0974-8369.24.16.744

Citation: Stajich O (2024). Herbal Medicine and Biodiversity: Preservation of Endangered Plants through Sustainable Harvesting. Bio Med. 16:744.

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