



Antidiabetic potential from selected Himalayan underutilized herbs: a review

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ABSTRACT

Diabetes is a metabolic condition resulting from impaired insulin synthesis, with glucose buildup in the body being the primary side effect. Many Himalayan plants have the ability to lower glucose production and treat the related secondary diseases out of which less than one percent of these plants have been pharmacologically confirmed. Only a few plants of the Himalayas have been studied, despite the fact that many of them can reduce glucose production. Many plants have been reported to have anti-diabetic activity, but in the Himalayan region, *Cichorium intybus*, *Artemisia absinthium*, *Acorus calamus*, *Dioscorea dumetorum* etc., are some of the underutilized herbs that can be studied for diabetes and its complications. The scientific documentation of the underutilized flora of Himalayan regions, distribution, and traditional applications may be beneficial for sustainable use of such a valuable plant resource. The analysis showed that the chosen herbal remedies held a great deal of promise as potential substitutes for diabetes medications. Additionally, every one of these plants has a unique way of bringing down blood sugar levels. This is due to the basic fact that the existence of various active chemicals substantially influences each herb's ability to function. This review will investigate several herbs for diabetic treatment, including active compound types, potency, mechanism of action, and toxicity. The recent advances in extraction, isolation, identification, and encapsulation of these bioactive compounds of underutilized plants of the Himalayan region has also been discussed. Likewise, research is being done on medicinal properties of underutilized plants of Himalayan region of Kashmir Valley.

1. Introduction

Plants designed for medical purposes are used in herbal medicine, sometimes referred to as phytomedicine, or botanical medicine. Compared to traditional medicine, the use of herbal medicine for medical purposes in the treatment and prevention of various illnesses, including diabetes, has a long history (Choudhury et al., 2018). One of the biggest global public health issues is diabetes. Hyperglycemia, often known as diabetes, is one of the frequent public health hazards that is still difficult to optimally manage. Uncontrolled diabetes or persistent hyperglycemia can lead to major consequences such renal disease, eyesight loss, cardiovascular disease, and lower limb amputations, all of which increase the morbidity and death rate associated with diabetes. Herbal medications are one of the methods used to treat and prevent diabetes and its subsequent consequences (Rawat et al., 2019). The use of herbal products is not just prevalent in the food sector but also in the

treatment of a number of illnesses. Different plant components, such as roots, stems, bark, leaves, fruits, berries, and flowers, are used in phytomedicine (Rzhepakovsky et al., 2022). The use of these medical applications dates back about 5000 years, as recorded on a Sumerian clay slab. However, the first recorded use of these treatments in a prescribed dosage was in Mesopotamia in 2600 B.C. (Choudhury et al., 2018). Even in this new period, the World Health Organization (WHO) reports that traditional medicines remain employed in the healthcare profession in the majority of nations, accounting for about 1/4 of prescription medications derived from plants (WHO and UNICEF, 2018).

Complementary and alternative medicine, or CAM, therapies are the main category that includes herbal medications. Patients became angry and leaned towards complementary and alternative medicine (CAM) due to rising treatment costs and an expanding list of adverse effects associated with conventional medications. Though less paternalistic and more patient-focused than allopathy, it is also employed in conjunction

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