

Review Article

ROLE PLAY OF HERBAL INGREDIENTS IN THE WORLDWIDE AILMENT OF DIABETES MELLITUS

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ABSTRACT

Diabetes Mellitus is one of the major endocrine disorders affecting nearly 10% of the worldwide population and now a days it's becoming a key issue for concern. In this review article, we studied the hypoglycemic activity of different medicinal drugs. We mainly focused on the four medicinal plants i.e. - *Gymnema Sylvestre*, *Salacia Reticulata*, *Swertha Chinata*, *Pterocarpus Marsupium*. In this the active constituents which we observed for the hypoglycemic activity were Gymnemic acid, Mangiferin, Kotalanal, Salacinol, Swertiamarin, Amanogenin, Liquiritigenin. These phytochemical constituents behaved as antidiabetic agents due to the interaction with multiple targets including alpha glucosidase, GAD6H, Sodium symporters, PPAR-g expression, amylose.

1. INTRODUCTION

In the recent scenario, everyone must have come across certain diseases associated to our lifestyle or other medical issues. The most common ones that have invaded almost in every other family includes diabetes, obesity, hypertension, etc. Herbal medicine, phyto-medicine or botanical medicine are synonymous which uses plants for medicinal purposes. Therapeutic utilization of natural medication in the treatment and anticipation of disease including diabetes has a long history contrasted with conventional medication. [1] According to "9th edition of International Diabetes Federation (IDF) Atlas", diabetes is one of the fastest growing global health emergencies of 21st century. As per the data 2019, 463 million people were estimated to have diabetes and the data was projected to reach 578 million by 2030 and 700 million by 2045. [2]. Diabetes mellitus is a metabolic disorder that influences the body's capacity to make or utilize

insulin. Insulin is a protein hormone which is produced by the pancreas that regulates the metabolism of glucose, fat, and protein in the body. Diabetes results in abnormal levels of glucose in the circulation system. [3,4]

Conventionally, medicinal plants were an indispensable element for the public health management. About 35% of the population still rely on herbal medical care. This count is increasing lately as the diversity of medicinal plants is evidently beneficial in healthcare field. [5]. Today, many of the anti-diabetic treatments includes the use of medicinal plants. Most plants contain saponins, flavonoids, terpenoids, alkaloids, glycosides that often have anti-diabetic effects. The main purpose of this article is to introduce a number of effective medicinal plants which is used as anti-hyperglycemic drugs along with the mechanism of plant compounds which is used to reduce glucose levels and increase insulin secretion. [6] In this article we will discuss *Gymnema*

acid, *Salacia Reticulata*, *Salacia chinensis*, *Swertha Chinata*, *Pterocarpus marsupium*. These are few herbal drugs which have antidiabetic effect. Also, herbal drugs are now becoming common in use due to the following reasons as Permanent Cure, less adverse effect, safe, cheap and eco-friendly.

2. GYMNEMA SYLVESTRE

The one of the most potential medicinal plants is *Gymnema Sylvestre*, which belongs to the family of Apocynaceae. It is a wild herb located in India, Africa, Australia, and China. It is a woody plant, climbing vine with ovate and elliptic leaves and it have a bell shape yellow flowers. The word "Gymnema" is derived from a Hindi word "Gurma" meaning "destroyer of sugar" and it also have a sugar lowering property. So, it's most common name is Gurmae. It is known as Meshashringi, Merasingi, Kavali, Kalikardori, Vikandi, Dhuleci, Madashringi, Podapatri, Adigum, Cherskurinja, Sannageraschambo, Chingingong or Australian Cowplant, Waldschlinge in German, Penplocia of the

woods in English. *Gymnema Sylvestre* was considered as one of the major botanicals and a traditional therapy to treat diabetes in the Ayurvedic system of medicine and also is included in Indian Pharmacopoeia as an anti-diabetic plant. [7-9].

2.1. Active Constituents

The main constituent of *Gymnema Sylvestre* is found to be gymnemic acid, a mixture of about 17 different saponins. This acid that is commonly used as a marker for standardization and quality control in many commercial preparations of gymnema. Also, many other chemical constituents have also been found in *G. sylvestre*, for example- gymnemasaponins- it is another major component of gymnema, of which there are at least seven different types. These constituents, as well as the polypeptide Gurmarin, the alkaloid conductril, gymnemine, gymnemase, and the sarsosaponin-type saponins gymnemasides 1-5 and gymnemasin B, C, and D are all likely to be responsible for the antidiabetic property and antisaccharin effect of the plant. [10]

