



The Therapeutic Potential of Dykure Capsule in Diabetes

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Abstract

This study investigates the management of diabetes of poly herbal formulation dykure capsule which contains *Azadirachata Indica*, *Trigonalia Foenumgraecum*, *Ficrochiza Kurroa*, *Terminalia Chrbula*, *Saraca Indica*, *Madhuca Indiacca*, *Coccinia Indica*, *Momoxdica Charantica*, *Asphaltum*, *Abitilon Indica*, *Tinospora Cardifolia*, *Terminilia Balerica* and *Aerva Lanota*. This herbal formulation has not shown any harmful side effects on the patients. To ascertain the long-term effect of the medicine, a farther clinical trial of Dykure Capsule is needed for a period between 6 months and 1 year.

Keywords: Dykure capsule, Diabetes, Polyherbal formulation

Introduction

Diabetes is a collection of metabolic disorders marked by high levels of glucose in the blood due to deficiencies in the production or function of insulin, or both. Diabetes is characterized by persistent high blood sugar levels, which can lead to lasting harm, impairment, and malfunction of several organs, particularly the eyes, kidneys, nerves, heart, and blood vessels. Multiple pathological mechanisms contribute to the onset of diabetes. The conditions vary from the immune system attacking and destroying the pancreatic β -cells, leading to a lack of insulin, to anomalies that cause the body to be resistant to the effects of insulin. The underlying cause of the anomalies in carbohydrate, lipid, and protein metabolism in diabetes is the inadequate functioning of insulin on the tissues it is meant to operate upon. Inadequate insulin secretion and/or reduced tissue responsiveness to insulin at various stages of the intricate hormone action pathways lead to deficient insulin action. The occurrence of both impaired insulin production and abnormalities in insulin action is common in patients, and it is often uncertain which of these abnormalities, if any, is the main cause of high blood sugar levels. Notable symptoms of high blood sugar levels include excessive urination, excessive thirst, weight loss, occasionally accompanied by excessive hunger, and impaired vision. Chronic hyperglycemia can also lead to stunted growth and increased vulnerability to specific illnesses. The immediate and potentially fatal outcomes of unmanaged diabetes include hyperglycemia accompanied by ketoacidosis or the nonketotic hyperosmolar syndrome. Diabetes can lead to several long-term complications. These include retinopathy, which can result in vision loss; nephropathy, which can lead to kidney failure; peripheral neuropathy, which increases the risk of foot ulcers, amputations, and Charcot joints; and autonomic neuropathy, which can cause symptoms in the gastrointestinal, genitourinary, and cardiovascular systems, as well as sexual



dysfunction. Individuals diagnosed with diabetes experience a higher occurrence of atherosclerotic cardiovascular, peripheral arterial, and cerebrovascular disease. Individuals with diabetes frequently exhibit hypertension and dysregulation of lipoprotein metabolism. Most cases of diabetes can be classified into two main etiopathogenetic categories (which will be described in more detail later). Type 1 diabetes is characterized by an absolute shortage in insulin secretion, which is the underlying cause of this condition. People who are more likely to acquire this form of diabetes can typically be diagnosed through serological evidence of an autoimmune disease affecting the pancreatic islets, as well as through genetic markers. Type 2 diabetes, which is the more common kind, is caused by a combination of insulin resistance and an insufficient compensatory insulin secretion response. In the second group, a level of high blood sugar that is significant enough to result in abnormal and functional alterations in different specific tissues, however lacking noticeable symptoms, can persist for an extended duration prior to the diagnosis of diabetes. During this period without symptoms, it is possible to detect an aberration in the way the body processes carbohydrates by measuring the level of glucose in the blood after fasting or after consuming a specific amount of glucose orally, or by measuring A1C levels [1].

Diabetes mellitus is a persistent condition characterized by impaired glucose metabolism and significant clinical ramifications. Diabetes can lead to several problems that affect multiple systems in the body. These complications can be categorized as microvascular complications, which include retinopathy (damage to the blood vessels in the retina), nephropathy (kidney damage), and neuropathy (nerve damage). Additionally, there are macrovascular complications, such as ischemic heart disease (reduced blood flow to the heart), stroke, and peripheral vascular disease (damage to blood vessels outside the heart and brain). The incidence of diabetes has been increasing in recent decades, driven by the worldwide surge in obesity rates. Diabetes is a significant public health problem due to its early onset of illness, high death rate, shortened lifespan, and the associated financial burdens on patients, caregivers, and the healthcare system. The categorization and identification of diabetes are intricate, and have been the focal points of extensive conversation, deliberation, and modification over several decades. The World Health Organization and American Diabetes Association expert committees have developed and debated diagnostic criteria for diabetes, focusing on measuring fasting or 2-hour post-load glucose levels. However, there is currently an ongoing discussion about whether glycated haemoglobin (HbA1c) should be used as a diagnostic tool for diabetes. The etiological categorization of diabetes is now widely acknowledged, with type 1 and type 2 diabetes being the primary classifications. Type 2 diabetes, which constitutes over 85% of the total prevalence of diabetes, is the most common kind [2].

In the recent years, diabetes has emerged as a growing menace, affecting both industrialized and developing nations. Diabetes can have a negative impact on production due to early illness and death, and this impact is likely to worsen if the condition starts affecting younger age groups. The primary impact will be observed among marginalized minority ethnic communities and in poor countries, where the highest rates of diabetes incidence are found. Without sustainable and cheap therapies, the occurrence of both microvascular and macrovascular problems will rise on a global scale. Efforts to avoid gestational diabetes and its intergenerational implications should be expanded. Hence, it is imperative that future public health initiatives for all countries incorporate the prevention of diabetes, its complications, and related illnesses, including cardiovascular disease [3].

A. Indica (Neem) has made a notable impact in both traditional and modern medicine. During the process of analyzing the phytochemical composition, researchers continue to uncover new antidiabetic substances. Hence, it is imperative to carry out a comprehensive phytochemical analysis of different extracts. Although there have been several findings highlighting the unparalleled antidiabetic properties of *A. indica*, there is a limited quantity of research available on its effects on oral glucose tolerance and glucose uptake. The therapeutic benefits of *A. indica* also encompassed diabetic problems such as cardiomyopathy, nephropathy, neuropathy, and wound healing ability. These investigations have effectively identified the interrelated connections between obesity, hypertension, and DM [4].

Terminalia Chebula is a significant component in a herbal preparation known as TRIPHALA, which is a widely recognized traditional remedy for chronic conditions like as diabetes, nervous system disorders, and epilepsy. The plant has been documented to exhibit many pleiotropic properties, including antioxidant, antidiabetic,



renoprotective, hepatoprotective, immunomodulatory, and prokinetic activities. The dried ripe fruit of *T. chebula* is a prominent Indian herb that is extensively used in the traditional Ayurvedic medicinal system due to its homeostatic, antitussive, laxative, diuretic, and cardiotoxic characteristics. Dried fruits serve as a notable reservoir of vegetable tanning substances and have a lengthy record of utilization in India. Within the Ayurvedic medical framework, this herb is employed as a tonic and for the treatment of hepatic and spleen enlargements, as well as dermatological issues. The combination of this chemical with water has been found to have anti-inflammatory and analgesic qualities, as well as the capacity to purify and facilitate the healing of wounds. These chemicals are employed as astringents for the treatment of haemorrhoids. The powder exhibits exceptional astringent qualities and can be utilized as a dentifrice to address issues such as loose gums, bleeding, and gum ulcers. The chebulic acid produced from the fruit of *Terminalia chebula* has antispasmodic characteristics similar to those of Papaverine. Increasing one's appetite can be advantageous as a means to help digestion. It acts as a moderate cathartic and a gentle herbal agent for cleansing the colon. It improves the sensory perception of the five senses. The infusion is used as a gargle for chronic cough and sore throat. This therapy is advantageous for alleviating the symptoms of dysuria and urine retention. It is advantageous in skin problems marked by secretions, such as allergies and other redness-related ailments. It helps reduce the negative effects of ingesting rich, creamy, and fatty food. Furthermore, research has demonstrated that the extract derived from *T. chebula* can serve as a supplementary therapy to medications aimed at correcting cholesterol levels. Furthermore, these investigations have demonstrated that the extract had the capacity to hinder the growth of bacteria in saliva and shows potential as an agent for preventing tooth decay. *Terminalia* is utilized in Ayurveda and Siddha for the treatment of various ailments such as constipation, chronic diarrhea, ulcers, gastroenteritis, asthma, cough, dyspnea, indigestion, hemorrhoids, candidiasis, parasitic infections, malabsorption syndrome, hepatomegaly, nephrolithiasis, urinary discharge, neoplasms, dermatological disorders, amnesia, epilepsy, diabetes, cardiovascular disease, anorexia, and wounds. Furthermore, it has been recorded to demonstrate antibacterial, antifungal, antiviral, anticarcinogenic, antioxidant, cardioprotective, antidiabetic, and wound healing characteristics. *Triphala* is a commonly prescribed drug for chronic ailments such as diabetes, neurological problems, and epilepsy. *Triphala* is a combination of three tropical fruits: *Terminalia chebula*, *Embolica officinalis*, and *Terminalia bellerica*. It efficiently promotes interior cleansing and improves digestion and absorption in all instances of blockage. *Terminalia chebula* is a component of the polyherbal blend known as "Geriforte," an Ayurvedic Rasayana recognized for its capacity to improve both physical and mental health, as well as enhance the immune system's resilience against different types of stress [5-14].

Saraca indica, also referred to as Ashoka, is an indigenous medicinal tree found in the Indian subcontinent. Throughout generations, it has maintained a prominent position in traditional Ayurvedic and folk medicine systems because of its medicinal characteristics. This plant has historically been employed to treat a range of health conditions, particularly those pertaining to women's health and wellness. The bark, leaves, and flowers of this plant contain bioactive substances, including alkaloids, flavonoids, tannins, and saponins, which has medicinal qualities. The tree possesses astringent, anti-inflammatory, and uterine tonic characteristics, rendering it a great asset in the treatment of illnesses such as menstrual disorders, menorrhagia, dysmenorrhea, and leucorrhoea.

Furthermore, Ashoka's anti-inflammatory properties are advantageous in the management of illnesses such as arthritis and rheumatism. The tree has been investigated for its potential as an antimicrobial agent, and extracts from it have shown antibacterial and antifungal activities. These findings have consequences for the treatment of different infections and the promotion of wound healing. Moreover, *Saraca indica* has exhibited antioxidant properties, which can aid in mitigating oxidative stress and its related health concerns. In addition, Ashoka has demonstrated potential in promoting reproductive health. Its uterine tonic qualities render it valuable in the management of female reproductive problems, and it is hypothesized to play a role in enhancing overall fertility.

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Madhuca Indica, an Indian herb, possesses significant therapeutic potential that remains underutilized. *Madhuca Indica* exhibits numerous pharmacological activities and possesses the ability to contribute to the well-being of society. It is utilized for its anti-diabetic, anti-ulcer, hepato-protective, anti-pyretic, anti-fertility, analgesic, anti-oxidant, anti-inflammatory, anti-swelling, anti-piles, emetic, dermatological, laxative, tonic, anti-burn, anti-earthworm, and wound healing properties, as well as for alleviating headaches and various other issues. Despite being readily available in several regions of India, the Mahua tree is not utilized as a food source. The Mahua flower holds significant significance in the lives of tribal communities across several regions of India. In certain regions of India, a limited amount of flowers is ingested either in their raw, cooked, or fried state. A significant amount of flowers is utilized in the production of distilled liquors. The newly made liquor possesses a powerful, pungent smokey scent, which diminishes with time. Furthermore, the bug found on the bark of the Mahua tree is utilized for the treatment of bone fractures. An intriguing aspect of the Mahua tree is its ability to bear two fruits during distinct seasons. The seeds of this tree are harvested to obtain oil, which is then utilized for various purposes. Mahua tree wood is utilized for household purposes such as constructing doors and windows. Additionally, the seed cake is known to possess insecticidal and insecticide properties, making it suitable for use as organic fertilizer in crops such as rice and sugarcane. The plant possesses medical qualities such as stimulant, demulcent, emollient, and heating effects. Skin disease, rheumatism, headache, laxative, piles, and occasionally used as a galactagogue and astringent, among other applications. [16-18].

Coccinia indica, also known as *Bimba* or *kanduri*, belongs to the *Cucurbitaceae* family. It is well-known in the Ayurvedic system of medicine for its ability to lower blood sugar levels and treat diabetes. Additional applications encompass the treatment of diverse ailments such as dermatological disorders and gonorrhoea. This review focuses on the chemical composition and medicinal properties of *Coccinia indica*. *Cannabis indica* is renowned for its reliable antidiabetic efficacy. The study demonstrated the ability of *C indica* leaves to enhance insulin production in diabetic rats by stimulating existing beta cells. It exhibits hypoglycemic, antidiabetic, hypolipidemic, hepatoprotective, larvicidal, anti-inflammatory, analgesic, and antipyretic properties. It has been determined that it lacks antituberculosis capabilities. The phytoconstituents found in *C. indica* include cephalandrol, tritriacontane, lupeol, b-sitosterol, cephalandrine A, cephalandrine B, stigma-7-en-3-one, taraxerone, and taraxerol. Terpenoids have been identified as the causative agents for the antidiabetic effects. Although *C. indica* is widely used in traditional medicine, there have been very few comprehensive research to date that have examined its therapeutic potential through systematic pharmacological and phytochemical analysis [19].

Shilajit, a traditional Hindu Ayurvedic rejuvenator known as a "Rasayana," has garnered significant attention in India. Shilajit is a dark-colored substance that oozes out from rock layers in several mountain ranges, particularly the Himalayas and Hindukush regions in the Indian subcontinent. It has a varying consistency. Shilajit has traditionally been employed as a folk remedy to enhance overall physical strength, combat aging, stabilize blood sugar levels, rejuvenate the urinary tract, improve brain function, revitalize the kidneys, strengthen the immune system, alleviate arthritis, manage hypertension, and treat various other ailments. Shilajit, scientifically known as *Asphaltum*, is a naturally occurring substance that is secreted from rocks in hot weather. It is also commonly referred to as mineral pitch. Shilajit is a dense aggregation of organic matter derived from plants, consisting of a sticky matrix including vegetable fibers and minerals [20].

Abutilon indicum In conventional medical practices, several components of *Abutilon indicum*, including roots, leaves, flowers, bark, seeds, and stems, have been utilized for their antioxidant, demulcent, laxative, diuretic,



analgesic, anti-inflammatory, and antiulcer properties. Traditional practitioners reportedly utilize the leaves as a folk treatment for inflammatory joint diseases. India has also reported the use of psychosomatic medicine for treating scorpion bites. The different components of the *Abutilon indicum* (L.) Sweet plant, including leaves, roots, flowers, seeds, and seed oil, are extensively utilized by several tribal societies and forest inhabitants for the remedy of various illnesses. The plant is well-known in the Siddha systems of medicine for its efficacy in treating piles, jaundice, leprosy, and ulcers. During the Vedic era, *Atibala* (*A.indicum* Linn.) roots were employed for the purpose of eliminating toxins, treating vata-pitta ailments, addressing cardiac issues, purifying the blood, remedying ocular conditions, and managing uterine abnormalities. The seeds and roots were utilized in the treatment of fever by preparing a decoction [21-23].

***Tinospora cordifolia* (Guduchi)**, is regarded as a significant botanical remedy within the Indian System of Medicines (ISM). The herb is renowned for its therapeutic efficacy and is utilized in the treatment of dyspepsia, diabetes, fever, urinary problems, jaundice, chronic diarrhea, cardiac disease, dysentery, helminthiasis, skin diseases, leprosy, and various other ailments. *Cordifolia* has long been acknowledged as the most extensively employed plant in traditional medicine due to its spasmolytic, allergen-free, and anti-diabetic properties. The herb greatly enhances the immune system. This plant exhibits numerous beneficial characteristics. The root of this plant is renowned for its stress-relieving and antimalarial effects, while its stem is utilized as a bitter stomachic and diuretic. It enhances the production of bile, improves blood quality, and treats jaundice. It possesses anti-toxin, antidiabetic, anticancer, immunomodulatory, antioxidant, and antibacterial properties[24].

***Terminalia Balerica* (bibhitaki)** In Ayurveda, the medication is categorized as an expectorant. *Triphala*, an essential component of Ayurvedic laxative formulation, is utilized for treating common cold, pharyngitis, and constipation. The bark possesses mild diuretic properties and can be beneficial in treating conditions such as anemia and leucoderma. The fruits possess astringent, acrid, digestive, anthelmintic, aperient, expectorant, sweet, anodyne, stypic, narcotic, ophthalmic, antipyretic, antiemetic, and rejuvenating properties. Unripe fruit possesses a gentle laxative effect, while ripe fruit exhibits astringent properties. Seeds are employed as a substance that enhances sexual desire. The oil derived from the pulp of the seeds is utilized in the treatment of leucoderma and alopecia. Recent studies have confirmed the oil's laxative properties [25-28].

***Aerva lanata*, (bui)** is a plant that grows upright or spreads out as a low shrub. It has a deep root system and several branches covered in dense, woolly hairs. This plant is native to various regions in India. The herb is utilized in traditional medicine to treat cough, strangury (painful and slow evacuation of urine), headache, and urolithiasis. *Aerva lanata* has been found to possess pharmacological qualities such as diuretic, anti-inflammatory, hypoglycemic, anti-diabetic, antiparasitic, antimicrobial, hepatoprotective, anti-urolithiasis, antiasthmatic, antifertility, and hypolipidemic effects, according to pharmacological research [29].

Formula of Dykure Capsules

(Chatwal's Dykure Capsules)			
1.	Neem	(<i>Azadirachata Indica</i>)	Home 1 Remedies P. No. 27
2.	Methi	(<i>Trigonalia Foenumgraecum</i>)	Herb That Heals P. No. 90
3.	Kutki	(<i>Ficrochiza Kurroa</i>)	Herb That Heals P. No. 28
4.	Haritika	(<i>Terminalia Chrbula</i>)	Herb That Heals P. No. 63
5.	Ashoka flower	(<i>Saraca Indica</i>)	Fiels Guide on Medicinal Plants P.No.166
6.	Madhuca bark	(<i>Madhuca Indiacca</i>)	Herb That Heals P. No.126
7.	Kandooki	(<i>Coccinia Indica</i>)	Home Remedies P.No.23
8.	Karela	(<i>Momoxdica Charantica</i>)	Vonaushadhi Chandrodaya Index (3) P. No. 81
9.	Shilajit malai	(<i>Asphaltum</i>)	Vonaushadhi Chandrodaya Index (7) P. No. 62
10.	Kangi booti	(<i>Abitilon Indica</i>)	Home Remedies P. No. 23
11.	Giloy	(<i>Tinospora Cardifolia</i>)	Home Remedies P. No. 21
12.	Bahera	(<i>Terminilia Balerica</i>)	Home Remedies P. No. 18
13.	Pol-kuda-pula	(<i>Aerva Lanota</i>)	Eyewitness Handbook HERBS P. No. 155



a) Age group of patients:

i) upto 25 years	2 pts.
ii) 26 yrs. to 35 yrs.	5 pts.
iii) 36 yrs. to 45 yrs	5 pts.
iv) 46 yrs to 55 yrs.	6 pts.
v) above 55 years	7 pts.
Total	25 pts.

b) P.P. Blood Sugar levels before trial:

i) between 150 and 200 mg/dl. -	7 pts.
ii) between 201 and 250 mg/dl. -	8 pts.
iii) between 251 and 300 mg/dl. -	5 pts.
iv) 301 mg/dl. and above	5 pts.

Change in P.P. Blood Sugar level

A drop of apprx. 85 mg/dl. in the P.P. Blood Sugar count have been recorded in 16 pts. The rest 9 pts. were given a second course of doses for 10 days, when a drop of apprx. 90 mg/dl. in the P.P. Blood Sugar count have been recorded.

Conclusion

Dykure Capsule, if taken 2 caps. thrice daily after meals for 10 to 20 days, can bring down the blood sugar level considerably. This herbal formulation has not shown any harmful side effects on the patients. To ascertain the long-term effect of the medicine, a farther clinical trial of Dykure Capsule is needed for a period between 6 months and 1 year.

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