Literary review study on effect of haridra on type 2 diabetes

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Abstract
The market at present is flooded with a variety of anti-diabetic drugs to provide diabetic patients with relief. Almost all the anti-diabetic drugs are liable to have untoward effects on our body. It is the need of the hour to provide mankind with near perfect solution to patients suffering from diabetes. The article enlists the action of the herbal drug haridra on type 2 diabetes. It also highlights upon the issue of the side effects caused by modern antidiabetic drugs. Article will help the reader to understand the role of haridra on type 2 diabetes and thereby promote further research on the scope and usage of herbal medicines and haridra in particular.

Keywords: Haridra, type 2 diabetes

Introduction
Haridra; Curcuma longa Linn is a medicinal plant enlisted in Dravyaguna. Man has been using herbal drugs and various plant products for combating of various diseases since times immemorial. The Indian subcontinent is enriched by a variety of flora both aromatic and medicinal plants. This vast flora has been utilized to a great extent as a source of many drugs in the Indian traditional system of medicine. Haridra is one such medicinal plant explained extensively in Indian materia medica i.e. the Dravyaguna Shastr. Various research works have been carried out on Haridra and it has been found that this drug is a potent anti-diabetic drug in type 2 diabetes. Type 2 diabetes is a serious medical condition that often requires the use of anti-diabetic medication, or insulin to keep blood sugar levels under control. However the development of type 2 diabetes and its side effects (complications) can be prevented if detected and treated at an early stage. Following pre-diabetes or metabolic disorder, type 2 diabetes can potentially be avoided through diet and exercise. Of the total global diabetes rate, 90% are living with type 2 diabetes but it is estimated that up to half of these people are unaware of their condition (undiagnosed diabetes).

Need of topic
The market has a number of modern day anti diabetics which the common man is consuming regularly for his solution to type 2 diabetes. The masses are unaware of the side effects these drugs have on their body after their prolonged consumption. Ayurveda offers herbal solution addressing the need for overall well-being and improvement in general health alongwith freedom from the disease. The article throws light upon the action of Haridra on type 2 diabetes on which further research is needed to validate its efficacy and safety.

Aim and objectives
Aim
To do literary review study of the action of Haridra on Type 2 Diabetes.

Objectives
To do a literary study on Diabetes and Haridra.
Materials and methods
Review work done and literature from the classical texts and research websites along with modern medical science literature and allied pharmacological studies have been incorporated in the study.

In Ayurveda, turmeric is well known for its therapeutic effect and has been enlisted in Dashemani Lekhaniya (emaciating), Vishaghnna (Anti poisonous), Kushtaghnna (Anti-dermatosis). The term Haridra in Sanskrit means ‘an efficacious drug for jaundice; it is vouched that this spice belongs to India indigenously and is also referred to as ‘Indian saffron’. Originating in India, Turmeric had reached China by 700 AD, East Africa by 800 AD and West Africa by 1200 AD, and also had begun to become popular all through the world. It is also known that the Arab traders had carried with them turmeric to Europe in the 13th century. Many medical properties have been attributed to Haridra Curcuma longa Linn. Rhizome of Haridra is known to possess therapeutic activities and has been used by medical practitioners as an anti-diabetic, hypolipidemic, hepato protective, anti-inflammatory, anti-cancerous, anti-diarrhoeal, anti-asthmatic. Haridra is most commonly used in cosmetology.

Mode of action of Haridra in Prameha
1) Kaphahara karma and role in Pre-Diabetes: due to its Katu-Tikta rasa, Ruksha, Laghu Guna, Usnha veerya and Katu Vipaka it effectively reduces the dushit Kapha. All gunas of Haridra are antagonistic to Kapha. Thus Haridra acts at the base of Prameha. This Kaphahara karma of Haridra is especially useful in the Pre-Diabetes condition. Pre-Diabetes may be considered as Kaphaj type of Prameha where the disease shows the signs of progression. Taking control at this stage helps in arresting the disease before it progresses to the complicated stages.

2) Pittahara karma: Inflammation in the body occurs with the involvement of dushit Pitta. Haridra due to its Tikta rasa significantly reduces dushit Pitta and thus reduces inflammatory nature. Haridra helps in healing the inflammation and also deals with Pittaja Prameha.

3) Vatahara karma and reversal of insulin-resistance: Due to its Usnha Veerya does Vatashaman and is helpful in Vataja Prameha. By effectively combating Kapha and Pitta, Haridra regularizes and stabilizes the gut and cellular metabolism. The cells are detoxified, blockages get removed and all the channels are cleansed. This helps in the nourishment of the Dhatus and aids unobstructed movements of Vata. The Dhatu thereby regain strength and thus immunity is restored. Vata is the chief controller of all the activities in the body functions and the whole body physiology is restored. This includes the proper production of insulin (agni) and its proper utilisation in the periphery, hence warding off the insulin resistance and its bad consequences.

Karma of Haridra on Dhatus in Prameha
1) Anti-atherosclerotic property: Haridra due to its tikta-katu rasa, ushna veerya, katu vipaka and laghu, ruksha gunas removes blockages in the blood vessels hence making the circulation of blood and nutrients easy. Vitiates kapha and meda get accumulated in the blood vessels and give rise to atherosclerosis. The circulating glucose is broken down by Haridra and it further facilitates the absorption of free glucose by cells due to its Srotoshodhana karma. Involvement of Rakta in Prameha points out to the presence of Kapha elements (glucose) in the blood.

2) Lipolytic and anti-cholesterol property of Haridra: Abaddha Medas is the dhatu which is primarily involved in the causation of Prameha. According to modern concepts excessive weight, obesity, cholesterol are the greatest risk factors for Diabetes Mellitus. Haridra is a proved lipolytic. Meda is a Kapha pradhana dravya. All Kaphahara drugs are mostly Medahara drugs. Haridra acts on this hazardous combination of Meda and Kapha and hence wards off Prameha. Haridra also destroys the cholesterol, excess fat and helps in shedding weight. Weight loss helps in regression of pathology in Prameha. This action is attributed to its tikta-katu rasa, ushna veerya, katu vipaka and laghu, ruksha gunas.

3) Haridra does the karma of srotoshodhana and reduces dushit pitta and kapha facilitating free movement of vata and hence helping in recovery of dhatus having kapha pradhanta like mamsa, lasika, ambu, majja, vasa, shukra.

4) Metabolic correction and anti-oxidant property by Haridra: due to its ushna veerya,katu tikta rasa does shodhan of rasa dhatu and hence helping in free circulation of poshakamsa and helping in restoring normal body functions

5) There is debility, reduced immunity, organic and tissue destruction, allied complications due to oxidation process and here Haridra plays a major role as it has an anti-oxidant effect

6) Immune-modulation action of Haridra: due to its antioxidant nature, Haridra helps in immune modulation and helps in free circulation of poshakamsa. Ojas attains strength due to proper nutrition thereby improving immunity.

7) Regulation of Liver Functions and correction of Anaemia by Haridra: Haridra removes the blockages in liver due to its tikta and katu rasa, ushna veerya,katu vipaka and laghu and ruksha gunas. Likewise haemopoetic functions are also restored. the function of liver is to metabolise the fat and detoxify the nutrients passing through it.

8) Detox effect of Haridra: Haridra reduces the blockages in the cells and re-establishes their normal functioning.

Pharmacological study on Haridra-Turmeric rhizome powder is very useful with Amla juice and Honey in Madhumeha diabetes mellitus [1]. The ingestion of 6 g Curcuma longa increased postprandial serum insulin levels, but did not seem to affect plasma glucose levels or GI, in healthy subjects. The results indicate that Curcuma longa may have an effect on insulin secretion [2]. The active principles in the rhizome of Turmeric plant viz.; curcuminoids lower lipid peroxidation by maintaining the activities of antioxidant enzymes like superoxide dismutase, catalase and glutathione peroxidase at higher levels. Antioxidant properties of curcuma longa is due to curcumin and its three derivatives (demethoxy curcumin,
bisdemethoxy curcumin and diacetyl curcumin) \[^3\]. A scientific and systemic exploration reveals the antidiabetic, hypolipidemic and hepatoprotective effects of Curcuma longa freeze dried rhizome powder dissolved in milk which could be used as an effective and safe antidiabetic dietary supplement of high potential \[^4\]. Curcuma longa is known to contain curcuminoids, glycosides, terpenoids, and flavonoids. Maximal inhibition of the enzyme Human Pancreatic Amylase (HPA) was obtained with Curcuma longa isopropanol extract and acetone extract. This inhibitory action on HPA causes reduction in starch hydrolysis leading to lowered glucose levels \[^5\]. Acharya Charaka has mentioned Haridra with amla swarasa and madhu in all types of Prameha. Haridra has already been proven clinically for its anti-diabetic activity.


Conclusion
Potential side effects of common diabetes drugs

**Sulfonylureas:** low blood sugar, upset stomach, skin rash or itching, weight gain

**Thiazolidinediones:** weight gain, risk of liver disease, anaemia risk, swelling of legs or ankles

Biguanides/Metformin: sickness with alcohol, kidney complications, upset stomach, tiredness or dizziness, metal taste

**Meglitinides:** weight gain, low blood sugar

Alpha-glucosidase inhibitors: gas, bloating and diarrhoea

However almost all the anti-diabetic drugs are liable to produce side effects on the human body. Pharmacological trials and in vitro trials have been conducted extensively on the herbal anti diabetic drugs and positive findings have been observed. Many clinical trials have been conducted till date and it has been observed that herbal preparations are potentially suitable for the treatment of diabetes and where a significant difference has been observed. Now the question arises of the clinical relevance and implications of the efficacy of herbal medicines. It seems that herbal medicines have been found to be more effective, but this may be so to lower or stop the consumption of modern anti diabetic drugs and hence reduce the adverse effects of modern anti diabetic drugs. But this is going to generate a major need to have a data for long time on the safety of the usage of herbal medicines. It maybe concluded that a number of herbal medicines are useful in prevention and reduction of diabetes but still this topic remains under researched and does seem to merit further attention.

**References**