



**Title:** Therapeutic importance of *Haridradi Gana* in the management of *Madhumeha* w.s.r. to diabetes mellitus

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**Abstract:**

**Background:** Haridradi gana is a specific classification described in Astanghrudaya which contains five such medicinal herbs that are mainly recommended in prameha

**Objectives:** To study five herbs of haridradi gana for their Antidiabetic potential as per Ayurvedic perspective. To study the Rasa,guna,virya,vipaka of haridradi gana.

**Methodology:** Haridradi gana is the 17<sup>th</sup> number of gana in the gana's of Ashtang hruday. This gana includes total 5 number medicinal herbs these are Haridra, Daruharidra, Yashtimadhu, Prushaniparni, Indrayav and analysis of these five drugs regarding rasa, guna, virya, vipaka.

**Result:** –Maximum contents of haridradi gana having 70% of tikta pradhan katu rasa, 70% ushna virya and 80% katu vipak, 60% of laghu-ruksha guna.. Tikta rasa has shoshak property, tikta rasa absorbs kleda-meda-vasa-majja-lasika-puya-sweda-mutra-purisha-pitta and kapha. it also rectifies agni leads to proper utilization of insulin in the periphery leads to reduction in insulin resistance. ushana virya causes stroto shodhana it leads to absorption of circulating free glucose by cells and reduces hyperglycemia. Laghu-ruksha guna

destroys accumulation of kapha and meda and by the side katu vipaka helps to remove sneha, sweda, kleda, and mala from body.

**Conclusion:** The present study reveals that the herbs included in haridradi gana having dominantly tikta-katu rasa, ushana virya, katu vipaka, laghu-ruksha guna significantly plays role as an anti-diabetic.

**Keyword:** Haridradi gan, madhumeha.

**Introduction:**

In Ayurveda, *Madhumeha* is considered as chronic and distressing disease, where there is involvement of *Tridosha* (three humors- vata, pitta, kapha), major *Dhatu* (tissues) such as *Rasa* (nutritional fluid plasma), *Asruka* (blood), *Mamsa*, (muscle tissue) *Meda* (adipose tissue/fat), *Majja* (bone marrow), *Shukra* (semen), *Ambu* (watery portion of body), *Vasa* (oily part of flesh), *Lasika* (lymph) and *Oja* (essence of all the tissues).[1] The features of *Madhumeha* mentioned in *Ayurveda* can be compared with NIDDM (Non insulin dependent Diabetes Mellitus), type II diabetes, a multifaceted metabolic disorder characterized by common feature of chronic hyperglycemia with disturbance of carbohydrate, fat and protein metabolism[2] whereas *Madhumeha* is a type of *Vatika Prameha*. Current Indian diabetic scenario is very astonishing,

calculating a prevalence rate of approximately 20% in urban populations and approximately 10% in rural populations.[4] The hazardous side effects of the hypoglycemic agents after long term use have further created problems and hence an ideal therapy is still obscure.[5] Currently, metformin is widely used for the treatment of diabetes. However, 10-30% of treated patients have nonspecific gastrointestinal alterations (Olivera-González *et al.*, 2010). Therefore, the search for new therapeutic alternatives is especially useful, where plant-derived products emerge as an excellent phytochemical resource. Haridradi gana is a specific classification described in Astanghrudaya, which contains five such medicinal herbs that are mainly recommended in prameha. (7)

All these five herbs have been screened for their Antidiabetic potential in-vivo and in-vitro by many scholars through the work as per Ayurvedic perspective. The objective of this review is to present and discuss the state of the art of current research conducted on the *haridradi gana* with hypoglycemic activity, which is normally used in alternative medicine therapy for the treatment of T2DM, and its possible mechanisms of action described in literature. This review seeks to briefly summarize the ancients as well as contemporary scientific literatures related role of *haridradi gana* in DM and its associated complications. Particular attention is given to comprehend the anti-diabetic property of *haridradi gana*. Authors have also compiled Ayurvedic properties of plants from different *Nighantu* (Ayurvedic materia medica), ancient texts, Moreover, informations were collected from contemporary textbooks, electronic journals, E-library & other research materials.

### **Aims and Objects:**

To study five herbs of Haridradi Gana for their Anti-diabetic potential as per Ayurvedic perspective.

- To study the Rasa, guna, virya, vipaka of Haridradi Gana.
- To present and discuss the state of the art of current research conducted on the *haridradi gana* with hypoglycemic activity, which is normally used in alternative medicine therapy for the treatment of T2DM, and its possible mechanisms of action described in literature.

### **Material and Methods**

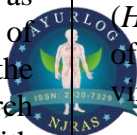
Haridradi gana is the 17<sup>th</sup> number of gana in the gana's of Ashtang hruday. This gana includes total 5 number medicinal herbs these are Haridra (*curcuma longa*), Daruharidra (*Berberis aristata*), Yashtimadhu (*Glycyrrhiza glabra*), Prushaniparni (*Uraria picta*), Indrayav (*Holarrneana antidysenterica*) and analysis of these five drugs regarding rasa, guna, virya, vipaka.

#### **1. Haridra**

Botanical name: *Curcuma Longa* Linn.  
Family: *Zingiberaceae*

#### **Anti-diabetic action of Haridra:**

- 1) Zeinab Ghorbani and others (2014) have shown that curcumin decrease blood glucose and glycosylated hemoglobin level by reduction in hepatic glucose production and glycogen synthesis and stimulation of glucose uptake by increasing GLUT1, GLUT2, GLUT3 genes expression, increasing activation of AMP kinase and stimulation of insulin secretion from pancreatic tissue. They have also shown that pancreatic cell functions.<sup>[8]</sup>
- 2) Megha G. Pande and others (2015) also demonstrated that the curcumin treatment improve overall function of B cells and conducted that curcumin intervention in a pre diabetic population may be beneficial.<sup>[9]</sup>



- 3) Sudha Ponnusamy and others (2012) demonstrated beneficial physiological and metabolic properties of haridra as hypoglycemic plant.<sup>[10]</sup>
- 4) Wicken barg et al studied the effects of curcuma longa on postprandial plasma glucose, insulin level and glycemic index in healthy subjects. They shown that the ingestion of 6gm of haridra increased postprandial serum insulin level which indicates that curcuma longa have effect on insulin secretion.<sup>[11]</sup>

## 2. Daruharidra

Botanical name: *Berberis aristata*

Family: Berberidaceae

### Antidiabetic activity of Daruharidra

- 1) Gu Y others (2010) studied the effect of Berberis in NIDDM clinically and found that Berberis decrease free fatty acid levels in serum.<sup>[12]</sup>
- 2) ZhangH (2010) reveled the fact that Berberis lowers the blood glucose level in Type 2 diabetic patient through increasing insulin receptor expression.<sup>[13]</sup>
- 3) Xia X (2011) observed that Berberis improved glucose metabolism in diabetic rat by inhibition of hepatic gluconeogenesis.<sup>[14]</sup>
- 4) Cok A and others examine the hypoglycemic effects of Berberis in the cell line L929 and found that it actually activates the glucose transport activities of GLUT1.<sup>[15]</sup>
- 5) NitinkumarUpwar and others (2011) studied the hypoglycemic effect of methanolic extract of daruharidra on normal and streptozotocin induced diabetic rat and found that repeated oral administration of daruharidra extract effectively reduced blood glucose level in diabetic rat<sup>[16]</sup>.
- 6) Akhtar MS and others (2009) studied the hypoglycemic effect of daruharidra root in normal and Alloxan induced diabetic rabbit and found that daruharidra roots contain

potent and orally effective antidiabetic component which either triggers the formation of insulin or shows insulin like effect<sup>[17]</sup>

- 7) Semwal BC and others (2009) found antihyperglycemic activity on root of daruharidrainalloxan induced diabetic rat.<sup>[18]</sup>
- 8) Ahmad Rehan and others (2010) also found antidiabetic activity in streptozotocin induced diabetic albino rat.<sup>[19]</sup>
- 9) Gupta JK and others (2010) also found significant antihyperglycemic effect of methanolic extract of stem bark of daruharidra in alloxan induced diabetic rat.<sup>[20]</sup>
- 10) Shah Kamal and others (2009) also obtained antidiabetic activity of stem bark of daruharidra in alloxan induced diabetic rat.<sup>[21]</sup>
- 11) Singh J and Kakkar P (2009) studied the anti-hyperglycemic effect of daruharidra root extract and its role regulating carbohydrate metabolism in diabetic rat and found that it lowers the blood glucose significantly without any hypoglycemic effect on their control counterparts. They established the fact that the extract of daruharidra root has strong potential to regulates blood glucose homeostasis through decreased gluconeogenesis.<sup>[22]</sup>

## 3. Indrayava

Botanical Name: *Holarrhena antidysenterica* Linn.

Family: Apocynaceae

### Anti-diabetic activity of Indrayava

- 1) Supriya Mana and others (2010) studied the hypoglycemic effect of indrayav on streptozotocin induced rat. They found that administration of methanolic extract of Indrayav for a period of 18 days to streptozotocin induced diabetic rat shows significant decrease of blood glucose level . They suggested the possible mechanism by



which methanolic extract brings about hypoglycemic activity may be the potentiating the insulin effect of plasma by increasing the pancreatic secretion of insulin by the b cell.<sup>[23]</sup>

- 2) Shirwaikar Annie and others(2006)have suggested the same possible mechanism.<sup>[24]</sup>
- 3) Vinaykumar Pathak and others (2015) studied the effects of extract of Indrayav against the streptozotocin induced diabetes in rat. Indrayav seeds induced reduction in serum blood glucose in diabetic rat in 14 and 21 days, reducing glucose concentration by 39.7 and 48.0% respectively.<sup>[25]</sup>

## Discussions:

### Rasapanchka of Haridradi Gana:

Drug name	Rasa	Vipaka	Veerya	Guna	Mahabhuta
<i>Haridra</i>	<i>Katu, Tikta</i>	<i>Katu</i>	<i>Ushna</i>	<i>Laghu, Ruksha</i>	<i>Vaayu, Agni, Akasha</i>
<i>Daruharidra</i>	<i>Tikta, Kashya</i>	<i>Katu</i>	<i>Ushna</i>	<i>Laghu, Ruksha</i>	<i>Vaayu, Akasha, Pruthvi</i>
<i>Yashtimadhu</i>	<i>Madhura</i>	<i>Madhura</i>	<i>Sheeta</i>	<i>Guru, Snigdha</i>	<i>Pruthvi, Jala.</i>
<i>Prushniparni</i>	<i>Madhura, Kashaya</i>	<i>Madhura</i>	<i>Sheeta</i>	<i>Laghu, Snigdha</i>	<i>Pruthvi, Jala.</i>
<i>Indrayava</i>	<i>Tikta, Kashaya</i>	<i>Katu</i>	<i>Ushna</i>	<i>Laghu, Ruksha</i>	<i>Vaayu, Akasha,</i>

### Comparison of Rasa of Haridradi gana plants:

From above table we can clearly see that, Kashay & tikta rasa are mostly present in all the drugs. and mentioned above that Kashay and tikta rasa is most effective as an anti diabetic agent

### Comparison of virya:

#### 4. Yashtimadhu

Botanical Name: *Glycyrrhiza glabra* Linn.

Family: Leguminoceae

#### Antidiabetic activity of Yashtimadhu

- 1) Revers FE investigated clinically and pharmacologically aspect of glycosiacnd established the anti-hyperglycemic effect of *Glycyrrhiza glabra*.<sup>[26]</sup>

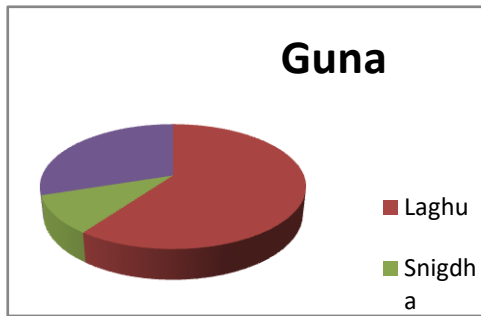
#### 5. Prushniparni

Botanical Name: *Uraria picta* Desv.

Family: Leguminoceae

There is no reference found about anti-diabetic action of Prushniparni (*Uraria picta* Desv.) available.

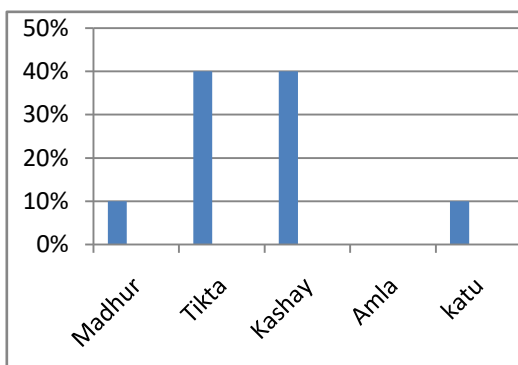
Out of 5 dravya there are:



70 % (percent) drug having ushna virya.  
30% (percent) drugs having Sheet virya

**Comparision of vipaka**

Out of 5 dravya there are:

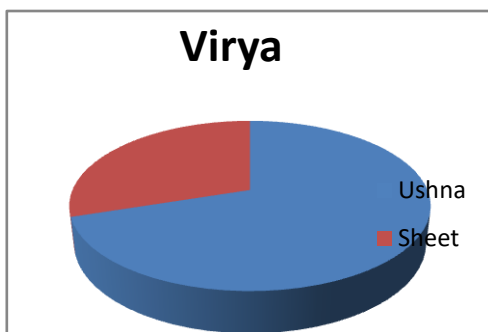


80% (percent) drug having katu vipaka.

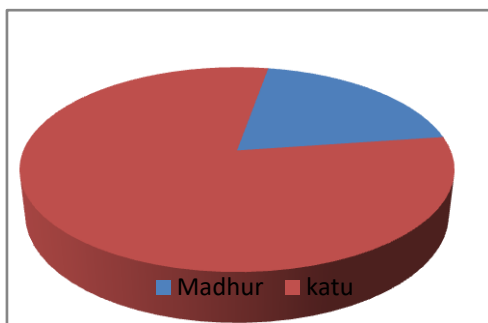
20% (percent) drug having madhur vipaka.

**Comparison of Guna:**

Out of 6 dravya there are:



60% (percent) drug having laghu guna.  
10% (percent) drug having snigdha guna.  
30% (percent) drug having ruksha guna.

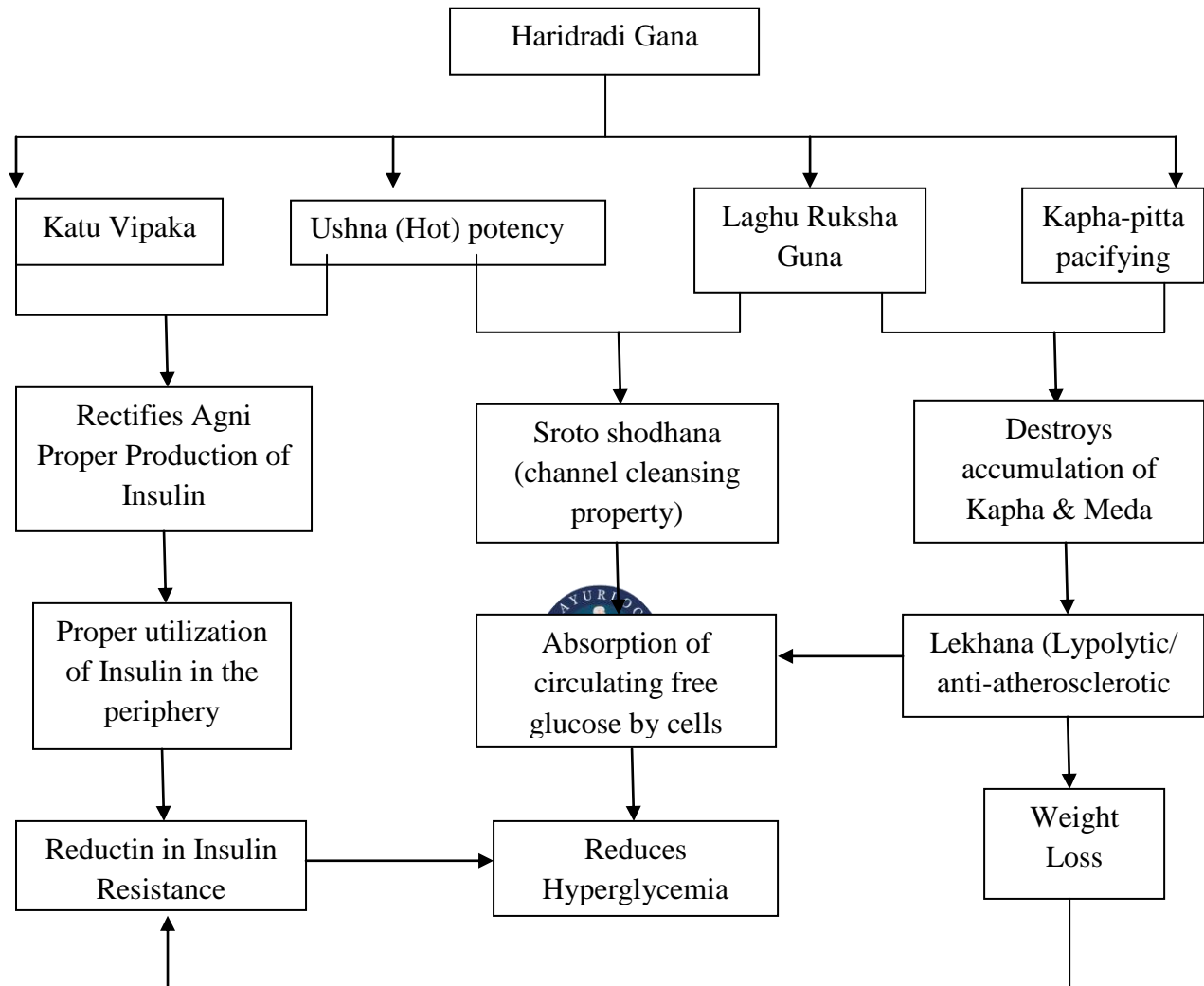


Maximum contents of haridradi gana having 70% of tikta pradhan kashya rasa, 70% ushna virya and 80% katu vipak, 60% of laghu-ruksha guna. Tikta rasa has shoshak property, tikta rasa absorbs kleda-

meda-vasa-majja-lasika-puya-sweda-mutra-purisha-pitta and kapha. it also rectifies agni leads to proper utilization of insulin in the periphery leads to reduction in insulin resistance. Ushana

virya causes stroto shodhana it leads to absorption of circulating free glucose by cells and

reduces hyperglycemia. Laghu-ruksha guna destroys accumulation of kapha and meda and By the side katu vipaka helps to remove sneha, sweda, kleda, and mala from body. So, Probable mode of action of haridradi gana in the breaking down of pathogenesis of DM is mentioned as below:



### Conclusion:

The present study reveals that the herbs included in *Haridradi Gana* having dominantly *Tikta-Kashaya Rasa*, *Ushana veerya*, *Katu vipaka*, *laghu-ruksha* guna significantly plays role as an anti-diabetic and current research work also proved the anti diabetic potential of individual plant so this review concluded that for the *Madhumehi* rugna haridradi gana may be a ray of hope as safe and cost effective treatment.

### Result:

Maximum contents of haridradi gana having 70% of tikta pradhan katu rasa, 70% ushna virya and 80% katu vipak, 60% of laghu-ruksha guna.. Tikta rasa has shoshak property, tikta rasa absorbs kleda-meda-vasa-majja-lasika-puya-sweda-mutra-purisha-pitta and kapha. it also rectifies agni leads to proper utilization of insulin in the periphery leads to reduction in insulin resistance. ushna virya causes stroto shodhana it leads to absorption of



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