



# Central Ayurveda Research Institute

Govt. of India, Ministry of AYUSH,  
Central Council for Research in Ayurvedic Sciences

## Centre of Excellence in Madhumeha

# Mustadi Ghanavati and Varadi Ghanavati in Diabetes



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## Mustadi Ghanavati and Varadi Ghanavati in Diabetes

These two Pramehahara Dravyas (antidiabetic formulations), mentioned in Ancient Ayurveda texts are a combination of Triphala (3 fruits) i.e Amalaki (*Phyllanthus embelica*), Hareetaki (*Terminalia chebula*), Vibheetaki (*Terminalia bellirica*) along with Devadaru (*Cedrus deodara*) and Musta (*Cyperus rotundus*) with addition of Daruharidra (*Berberis aristata*) in Varadi and Indrayava (*Holarrhena antidysenterica*) seeds in Mustadi. These two formulations are generally used as decoction (kwatha) or concentrated water extracts (Ghanavati).

Triphala, is a well-known medicine in Ayurveda having Rasayana action (immunomodulatory) used for preventive health and management of age-related problems including Diabetes, Obesity, Dyslipidemia, Gastro-Intestinal issues, Anxiety, liver disorders. Regular intake of Triphala helps to balance Tridosha (biological humors known as Vata, Pitta & Kapha) and Agni (factors responsible for digestion & assimilation).

The ingredients used in both the formulations have shown their actions in Diabetes and related diseases. For instance, Hareetaki inhibited formation of advanced glycosylation end products[i], Vibheetaki possessed anti-oxidant,  $\alpha$ -amylase inhibitory activity and a restorative effect on body weight and blood biomarkers such as glucose, creatinine, total protein, total cholesterol, LDL, HDL, triglyceride, urea and uric acid. [ii] Amalaki showed HbA1c lowering effect. [iii] Triphala inhibited glycation enzymes, enhanced both PPAR- $\alpha$  and - $\gamma$  signaling, which increased insulin responsiveness and glucose uptake without inducing adipogenesis. [iv] Daruharidra is known to lower the blood glucose significantly without any hypoglycemic effect. It reduced lipid peroxidation and protein carbonylation. It also increased the glucokinase and glucose-6-phosphate dehydrogenase activities and decreased glucose-6-phosphatase activity. [v] Devadaru showed its effect on pancreatic islet cells through enhanced islet regeneration activity. [vi] Musta has potential protein glycation inhibition activity. [vii]

Many scientific studies have demonstrated their safety and efficacy. Antidiabetic effect of these formulations was assessed in streptozotocin induced type 2 diabetic Wistar rats. Blood glucose lowering effect was observed in both the formulations in comparison to the untreated diabetic control group. There was significant ( $p < 0.01$ ) decline in blood glucose levels in STZ-induced diabetic rats on the 21st day and 28th day in comparison to the diabetic control group.





**Amalaki**  
(*Phyllanthus embelica*)



**Hareetaki**  
(*Terminalia chebula*)



**Vibheetaki**  
(*Terminalia bellirica*)



**Devadaru**  
(*Cedrus deodara*)



**Musta**  
(*Cyperus rotundus*)



**Indrayava**  
(*Holarrhena antidysenterica*)



**Daruharidra**  
(*Berberis aristata*)

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