



Ishaana
NUTRACEUTICALS PVT LTD



Bringing in
**Exclusive, Evidence
Based, Standardized
and Branded
Nutraceutical
Products with
Unique Features &
Differentiating
Benefits**

Presenting

*A clinically proven path-breaking
innovative nutraceutical product for
Type 2 Diabetes management*

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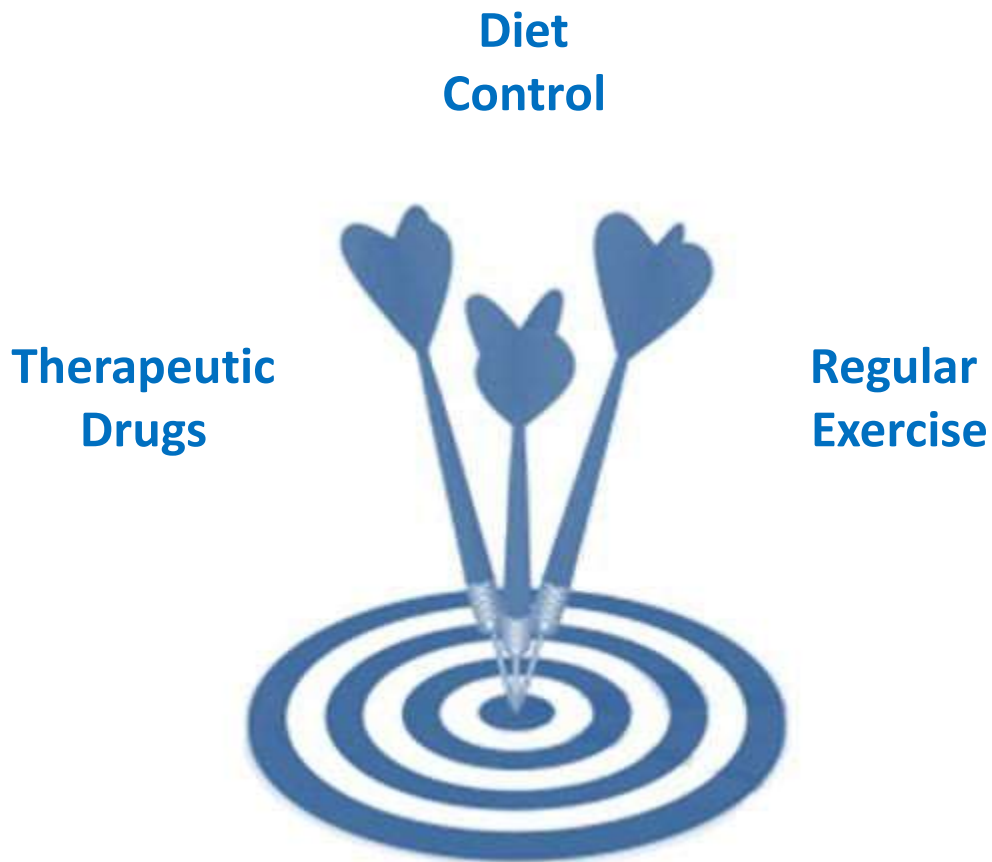
The Nutraceutical Rescue for High Blood Sugar



Hintonia latiflora - Copalchi

Positive effects of preparations of the bark of the Central American plant ***Hintonia latiflora*** also known as "copalchi" (family Rubiaceae) on blood glucose reduction and the maintenance of physiologically normal blood glucose values have been reported in scientific investigations published over at least the past 60 years

Current Treatment Approach in Type 2 Diabetes



**A Collaborative Approach
Yet falling short of controlling
the disease**

The 4th Dimension in Diabetes Treatment & Control

1. Medicines
2. Food
3. Exercise

**Adding
Nutraaceutical
Support**



The New Approach

Presenting . . .

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One
Ingredient

5 Actives

The Polyphenolic Compounds
of *Hintonia latiflora* -
Copalchi

Phenylcoumarins
glycosides

Cucurbitacins
glycosides

Coutareagenin

Chlorogenic acid

Ursolic acid and
Desoxycordifolinic
acid

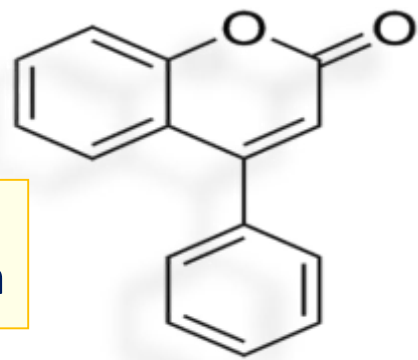
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Hintonia latiflora - 4-Phenylcoumarins glycosides



**G6Pase
inhibition**



Studies propose that phenylstyrene -4-phenylcoumarins glycosides,

- Alter glycogen breakdown by **inhibiting the key enzyme catalyzing the gluconeogenesis and glycogenolysis reactions,** glucose-6- phosphatase (G6Pase)
- Groups treated with the active principles and the extract showed less body weight loss than the glibenclamide-treated and diabetic control groups

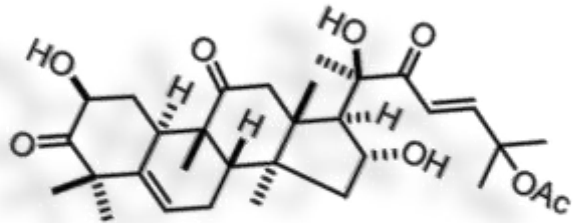
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Hintonia latiflora - Cucurbitane compounds



**Stimulation of
insulin release**



An analogue of 23,24-dihydrocucurbitacin F from *Hintonia latiflora*

- Has been reported to possess significant hypoglycemic and antihyperglycemic effects. The probable mechanism underlying antihyperglycemic effect could be **stimulation of insulin release and regulation of hepatic glycogen metabolism**

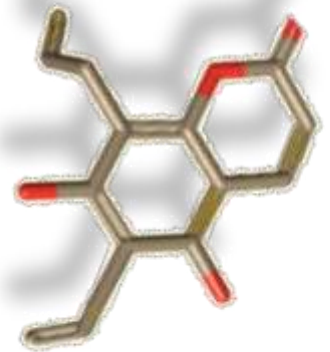
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Hintonia latiflora - Neoflavonoid Coutaregenin



**Stimulation of
GLUT4
TRANSLOCATION**



Series of tests provide evidence that the neoflavonoid Coutaregenin, (5-hydroxy-7-methoxy-4-(3,4-dihydroxyphenyl)-2H-benzo-1-pyran-2-on), one of the active substances in Hintonia latiflora bark produces a significant reduction of diabetic elevated blood sugar levels .

- Suggested mechanism of action is through **activation of AMPK pathway and stimulation of GLUT4 translocation**

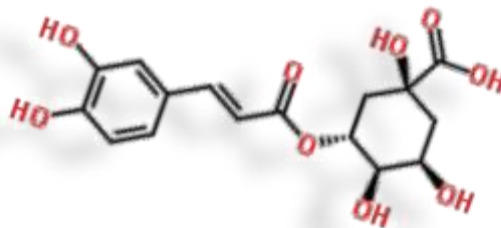
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Hintonia latiflora - Chlorogenic acid (CGA)



**Modulation of
adiponectin receptors**



CGA could lower the levels of fasting plasma glucose and HbA1c during late diabetes and improve kidney fibrosis to some extent through the modulation of adiponectin receptor signaling pathways in db/db mice.

- CGA acts through **ADPNR-related signaling pathways** to improve glucose and lipid metabolism

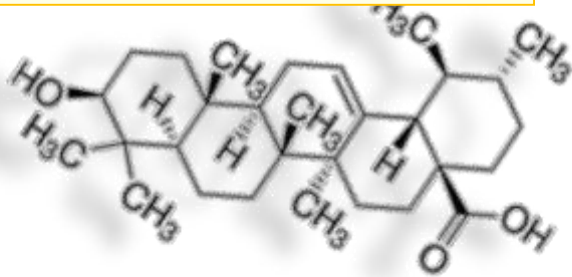
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**Hintonia latiflora - Ursolic acid
and Desoxycordifolinic acids**



**Decreases G6Pase
Increases Glucokinase**



Supplement with UA doses reduce fasting blood glucose and plasma triglyceride levels in T2D mice

- UA supplement effectively decrease hepatic glucose-6-phosphatase activity and increased glucokinase activity, the glucokinase/glucose-6-phosphatase ratio, GLUT2 mRNA levels and glycogen content compared with the diabetic control mice. UA supplement attenuated hyperglycemia-induced renal hypertrophy and histological changes

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The Nutraceutical Rescue for High Blood Sugar

Open Prospective Trial with *Hintonia Latiflora* extract



EUROPEAN JOURNAL
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Demographic patient data

Number of patients	n = 41 (100%)
Female	n = 33 (80.5%)
Male	n = 8 (19.5%)
Age	60.9 ± 8.5 years
Age range	41 to 79 years
Duration of the diabetes symptoms	5.9 ± 4.9 years
Range for duration of the diabetes symptoms	1 to 19 years

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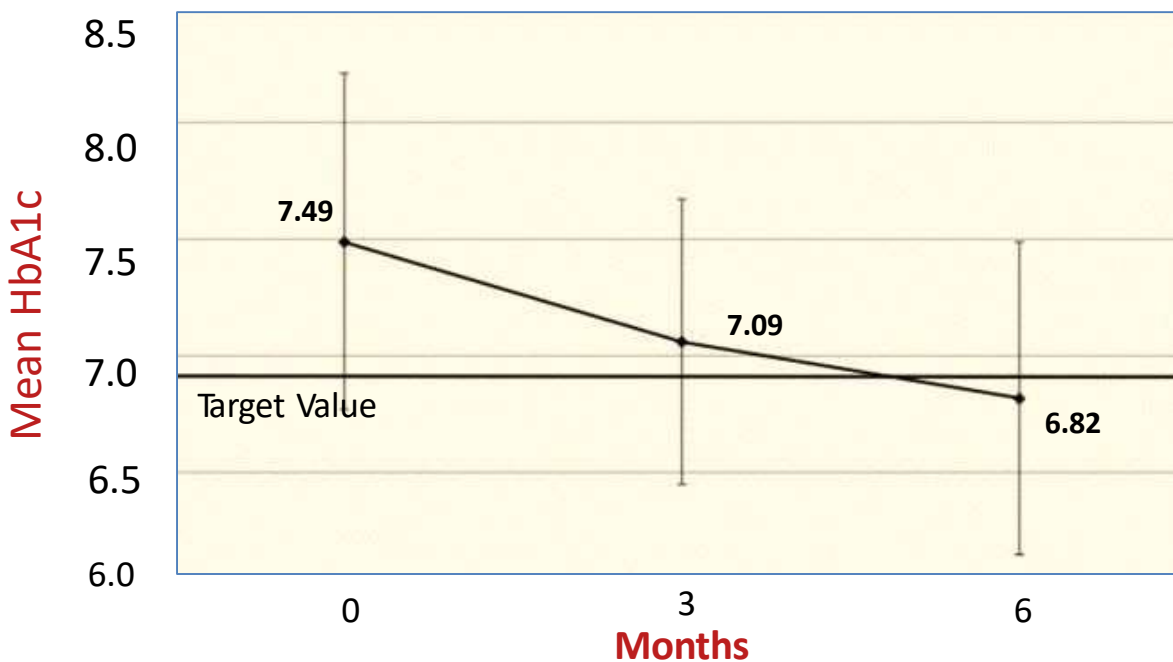
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Course of HbA1c values under intake of *Hintonia* extract



Within the six months of exposure, the HbA1c values decreased by 11.2%.

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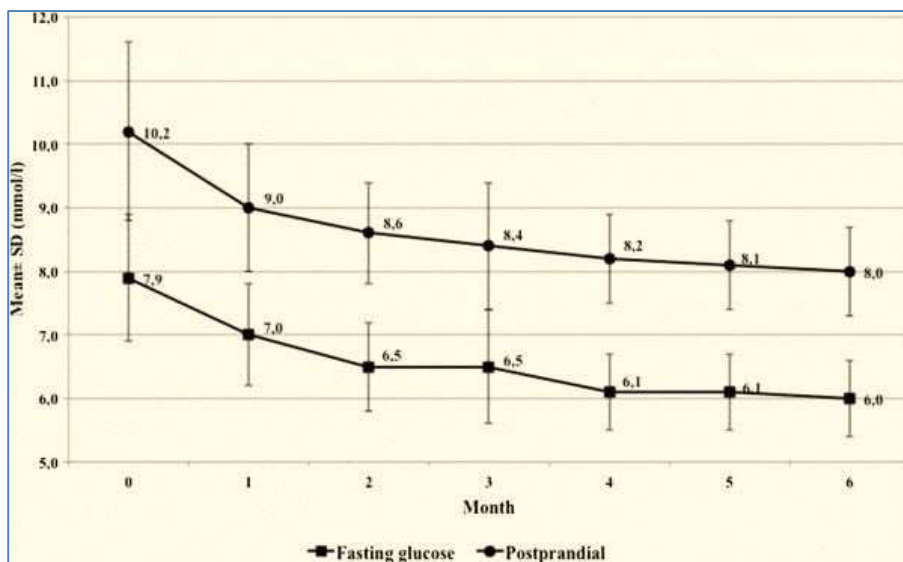
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Course of fasting glucose and postprandial blood glucose under intake of *Hintonia* extract



The six-month exposure analysis yielded 25% reduction of starting values of fasting blood glucose and a 22% lowering of the postprandial glucose

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**Liver parameters and blood lipids under intake
of *Hintonia* extract**

The value of alanine aminotransferase ALT decreased from 0.41 ± 0.10 U/l to 0.36 ± 0.07 U/l

The value of glutamyl aminotransferase from 0.45 ± 0.29 U/l to 0.36 ± 0.17 U/l

The value of cholesterol decreased from 213.5 ± 34.0 mg/dl to 202.6 ± 32.9 mg/dl

The value of triglycerides from 193.1 ± 87.7 mg/dl to 164.8 ± 59.3 mg/dl

The value of other parameters such as LDL and HDL showed no change

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Discussion & Conclusion

Eur J Med Res. 2014; 19(1): 16.

The three crucial glycemic parameters, HbA1c, fasting and postprandial glucose, were statistically significantly and clinically reduced during intake of a dry concentrate from the bark of *Hintonia latiflora*.

Published studies suggest a risk reduction of diabetic macro- and microangiopathies with an improvement of glycemic parameters

The observations of this study are consistent with earlier studies, and specifically with a controlled long-term study.

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Animal Research

Multiple experiments using diabetes animal models have demonstrated the antihyperglycemic properties of *Hintonia latiflora*

Author/Year	n	Dose	Results
			Hypoglycemic effect of STZ-induced diabetic rats
Cristians, et al (2009)	36	300mg/kg	- Crude extract produced - 69% at 9h
		100mg/kg	- Crude extract produced - 62% at 9h
Guerrero-Anzloo, et al (2007)	66	300mg/kg	- Crude extract produced - 33% at 9h
		100mg/kg	- Crude extract produced - 21% at 9h
		30mg/kg	- Crude extract produced - 16% at 9h
		10mg/kg	- Crude extract produced - 15% at 9h
Pinto, et al (1997)	60	Copalchi enriched chow	20-25% decrease in blood glucose between 7 - 15 days
Korec, et al (2000)	21	200mg/kg	- Crude extract produced - 42% at 4h
		100mg/kg	- Crude extract produced - 36% at 4h

streptozotocin (STZ)

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Toxicity Studies

The animal studies have examined toxicity in mice using standard procedures such as the Lorke Method, Ames test, and the brine shrimp lethality bioassay

Author/Year	Species	LD50	Geno-toxicity
Deciga-Compos, et al (2009)	Hintonia	>5g/kg	Non-mutagenic (Ames test)
Zlung, et al (2006)	UA present in HLA	No toxic effect was found at up to 10X the effective dose	No DNA damage (single-cell gel electrophoresis)

Additional toxicity studies performed by German researchers have been carried out on rabbits, mice, and rats (15,34-36). Result showed rabbits were devoid of discernable damage. The histological examination of organs in mice revealed no injury, and genotoxicity tests on primary hepatocytes of mice were negative. Chronic toxicity tests on rats revealed no histological damage to organs

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Summary & Conclusion

Active compounds in Hintonia extract include 4-phenylcoumarins, cucurbitacins, coustareagenins, ursolic acid and chlorogenic acid.

Five separate controlled studies employing the STZ-induced diabetes model have demonstrated the glycemic lowering efficacy of Hintonia extract.

The antihyperglycemic effects are purported to be caused by improved pancreatic insulin secretions as confirmed by plasma insulin levels of diabetic rats. Hepatic glycogen content of treatment groups also demonstrated marked improvement, suggesting that copalchis may regulate glycogen metabolism.

All studies reported antihyperglycemic effects of 5% to 69% from baseline at different doses

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Formulation



Each cellulose capsule contains:

Polyphenols from Copalchi Bark extract (Hintonia Latiflora) 50 mg, Vitamin C 40 mg, E 3.5 IU, Vitamin B1 1 mg, Vitamin B2 1.4 mg, Vitamin B6 2 mg, Folic Acid 100 mcg, Vitamin B12 1 mcg, Biotin 2mg, Zinc (From Zinc acetate) 12 mg, Chromium picolinate 200 mcg

The recommended dose is 2 capsules once or twice a day