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### Antidiabetic Herbal Products Marketed in India: An Update

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Plants have been always a replete source of drugs since from ancient times. The Indian traditional system of medicine is a rich source of plants for the various maladies. As per World Health Organization (WHO), nearly 90 % of the population in developing countries use plants as a primary source of treatment. Diabetes Mellitus is one of the fast growing metabolic disorder affecting people globally. Furthermore it is associated with hyperinsulinemia, glucose tolerance, insulin resistance causing multiple complications and comorbidities.

**Keyword:** Herbal plants, Diabetes Mellitus, Insulin resistance.

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#### 1. Introduction

Diabetes Mellitus (DM) is a fifth fastest growing disorder and entailing a huge financial burden and multiple medical policy issues. As per International Diabetes Federation (IDF), the number of individuals with diabetes in 2011 crossed 366 million, with an estimated about 4.6 million deaths each year<sup>[1]</sup>. The prevalence of diabetes in the age group of 20 to 79 is as follows: India 8.31%, Nepal 3.03%, and Pakistan 6.72%, Bangladesh 9.85%, Sri Lanka 7.77%. Uncontrolled or untreated diabetes leads to a plethora of complications affecting the vascular system, nerves, eyes, and kidneys leading to peripheral vascular disease, neuropathy, nephropathy, retinopathy, morbidity, and/or mortality<sup>[2]</sup>.

According to WHO around 21,000 plants are used as a sources of drugs, among these nearly 2,500 species are found in India and about 800 plants are used as a antidiabetic plants<sup>[3, 4]</sup>. India is the largest producer of medicinal plants and is called as the botanical garden of the world<sup>[4]</sup>. In case of Western medication is mainly

associated with the different severe side effects and high costs of drugs.

#### 2. Conventional Medicinal Plants used in Herbal or Ayurvedic preparations

The most common and effective antidiabetic medicinal plants of Indian origin are Giloy (*Tinospora cordifolia*), gurmar (*Gymnema sylvestre*), garlic (*Allium sativum*), Beetroot (*Beta vulgaris*), methi (*Trigonella foenum-graecum*), ghrita kumara (*Aloe vera*), neem (*Azadirachta indica*), ash gourd (*Benincasa hispida*), tulsi (*Ocimum sanctum*), anar (*Punica granatum*), purging Nut (*Jatropha curcas*), fever nut (*Caesalpinia bonducella*), bisasar (*Pterocarpus marsupium*), jamun (*Syzygium cumini*), karela (*Momordica charantia*), bael (*Aegle marmelose*), church steeples (*Agrimonia eupatoria*), mango (*Mangifera indica*), mulberry (*Morus alba*), Babul (*Acacia arabica*), onion (*Allium cepa*), bitter apple (*Citrullus colocynthis*), eucalyptus (*Eucalyptus globules*), banyan tree (*Ficus benghalensis*), potato (*Ipomoea batatas*), kiwach (*Mucuna pruriens*), gurhal (*Hibiscus rosa-sinesis*), ivy gourd (*Coccinia indica*)<sup>[2]</sup>.

The present review mainly represents the herbal and Ayurvedic products with their composition used in the treatment of diabetes mellitus in India shown in the table below:

Table-1: Antidiabetic Herbal Products Marketed in India

S.No	Brandname	Manufacturer	Ingredients
1	Diabecon	Himalaya	<i>Balsamodendron mukul, Pterocarpus marsupium, Casearia esculenta, Gymnema sylvestre, Glycyrrhiza glabra, Tinospora cordifolia, Swertia chirata, Tribulus terrestris, Phyllanthus amarus, Gmelina arborea, Berberis aristata, Aloe vera, Eugenia jambolana, Asparagus racemosus, Boerhaavia diffusa, Sphaeranthus indicus, Gossypium herbaceum, Shilajeet and powders of Momordica charantia, Piper nigrum, Ocimum sanctum, Abutilon indicum, Curcuma longa, Rumex maritimus and Trikatu.</i>
2	Pancreatic tonic 180 cp	Ayurvedic herbal supplement	<i>Pterocarpus marsupium, Cinnamomum tamala, Gymnema sylvestre, Azadirachta indica, Ficus racemosa, Aegle marmelos, Trigonella foenum graecum, Momordica charantia, Syzygium cumini</i>
3	Diasulin		<i>Cassia auriculata, Coccinia indica, Momordica charantia, Syzygium cumini, Emblica officinalis, Trigonella foenum graecum, Curcuma longa, Gymnema sylvestre, Tinospora cordifolia, Scoparia dulcis</i>
4	Bitter gourd Powder	Garry and Sun natural Remedies	Bitter gourd ( <i>Momordica charantia</i> )
5	Diabetes-Daily Care	Nature's Health Supply	Alpha Lipoic Acid, Chromax, Vanadium, Cinnamon Extract, Fenugreek extract, <i>Gymnema sylvestre</i> extract, <i>Momordica</i> extract, Licorice Root extract
6	Ayurveda alternative herbal formula to Diabetes:	Chakrapani Ayurveda	Gurmar ( <i>Gymnema sylvestre</i> ), Jamun Gutli ( <i>Syzygium cumini</i> ), Neem ( <i>Azadirachta indica</i> ), Methika ( <i>Trigonella foenum graecum</i> ), Guduchi ( <i>Tinospora cordifolia</i> ), Pushkarmool ( <i>Inula racemosa</i> ), Karela ( <i>Momordica charantia</i> ).
7	Dia-care	Admark Herbals Limited	Sanjeevan Mool, Jambu beej, Kadu, Neem chal, Himej, Namejav
8	Gurmar powder	Garry and Sun natural Remedies	Gurmar ( <i>Gymnema sylvestre</i> )
9	Syndrex	Plethico Laboratories	Germinated Fenugreek seed extract
10	Diabecure	Nature beaute sante	<i>Berberis vulgaris, Millefolium, Juglans regia, Erythraea centaurium, Taraxacum</i>
11	Epinsulin	Swastik Formulations	vijaysar ( <i>Pterocarpus marsupium</i> )
12	Diabeta	Ayurvedic cure Ayurvedic Herbal Health Products	<i>Momordica charantia</i> (Bitter Gourd), <i>Zingiber officinale</i> (Ginger), <i>Gymnema sylvestre, Curcuma longa</i> (Turmeric), <i>Pterocarpus marsupium</i> (Kino Tree), <i>Vinca rosea</i> (Periwinkle), <i>Azadirachta indica</i> (Neem), <i>Tinospora cordifolia, Acacia arabica</i> (Black Babhul), <i>Syzygium cumini</i> (Black Plum).
13	Madhumeha Kusumakara Rasa	Shree Dhoothapapeshwar Limited	Vasant Kusumakar Rasa (Suvarnayukta), Mamajjaka ghana (Dried Aq. extract of <i>Enicostemma littorale</i> ), Haridra ( <i>Curcuma longa</i> ), Amalaki ( <i>Emblica officinalis</i> ), Shuddha Shilajatu (Processed asphaltum), Guduchi ( <i>Tinospora cordifolia</i> ), Yashada bhasma (Zinc bhasma), Bilva patra swaras ( <i>Aegle marmelos</i> ), Asana kwath ( <i>Pterocarpus marsupium</i> ).
14	Zpter	Om Pharmaceuticals Limited	Vijayasara, Dalchini, Haridra, Haritaki, Bibhitaki, Amalaki, Chtrak, Jasad Bhasma, Guduchi ( <i>Tinospora cordifolia</i> ) and Madhunashini ( <i>Gymnema sylvestre</i> ).
15	HypoNIDD	Charak Pharma	Yashad Bhasma (Zinc Calx), Shilajit (Purified Asphaltum), Karela ( <i>Momordica charantia</i> , bitter gourd), Haridra ( <i>Curcuma longa</i> , turmeric), Tarwar ( <i>Cassia auriculata</i> , Avarakkai, Indian broad-beans), Amalaki (Amla, Indian Gooseberry, <i>Emblica officinalis</i> ), Raja Jambu ( <i>Eugenia jambolana</i> ), Mamejavo ( <i>Enicostemma littorale</i> ), Meshashringi ( <i>Gymnema sylvestre</i> ), Vijaysaar ( <i>Pterocarpus marsupium</i> ), Guduchi ( <i>Tinospora cordifolia</i> ), Neem ( <i>Melia azadirachta</i> ), Kirat Tikta ( <i>Swertia chirata</i> )
16	Dabur Madhu Rakshak	Dabur	Amla ( <i>phyllanthus emblica</i> ), Tejpatra ( <i>Cinnamomum tamala</i> ), Vijaysar ( <i>Pterocarpus marsupium</i> ), Gurmar ( <i>Gymnema sylvestre</i> ), Jamun seed ( <i>Eugenia jambolana</i> ), Kali marich ( <i>piper nigrum</i> ), Neem leaves ( <i>azadiracheta indica</i> ), Methi ( <i>trigonella foenum-graecum</i> ), Bahera ( <i>Terminalia belerica</i> ), Bhavana Dravyas, Shudh Shilajit, karela fruit ( <i>momordica charantia</i> ), Hareetaki ( <i>Terminalia chebula</i> )
17	Ojamin	Tates remedies	<i>Aegle Marmelos, Trigonella Foenum Graecum, Carum Carvi, Emblica Offcinals, Terminalia Chebula, Terminalia Belarica, Swertia Chirata, Tinospora Cordifolia, Eugenia Jambolana, Picrorhiza Kurroa, Gymnema Sylvestre, Salacia Chinensis Linn, Curcuma Longa, Melia Azadirachta</i>
18	Madhumehari Granules	Baidyanath	gudmar ( <i>gymnema sylvestre</i> ), Jamun guthali ( <i>syzygium cumini</i> ), Gulvel ( <i>Tinospora cordifolia</i> ), Kkarela Beej ( <i>Momordica charantia</i> ), Khadir Chuma ( <i>Acacia Catechu</i> ), Haldi ( <i>Curcuma Longa</i> ), Amia ( <i>Emblica-officinalis</i> ), vijay-sar ( <i>Pterocarpus Marsupium</i> ), Tejpatra ( <i>cinnamomum-Tamala</i> ), Shilajit (Asphaltum), Gularphal Chuma ( <i>Ficus Glomerata</i> ), Kutki ( <i>Picrorhiza Kurroa</i> ), Chittrak ( <i>plumbago Zeylanica</i> ), Methi ( <i>Trigonella-foenum graecum</i> ), Bhavna of Neem Patti ( <i>Azadirachta - Indica</i> ), Bilwa Patra ( <i>Aegle Marmelos</i> )

### 3. Conclusion

Finally, it is concluding that many herbs possessing antidiabetic potential by acting on

various drug therapeutic targets i.e presently western medicine targets. But there is a need of

evaluation of molecular mechanism along with proven clinical trials.

#### 4. Acknowledgement

Nil

#### 5. Conflict of Interest

Nil

#### 6. References

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