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Review Article

REVIEW ON ANTI-DIABETIC PLANTS OF DIFFERENT NIGHANTUS (AYRVEDIC MATERIA MEDICA)

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Abstract

Diabetes is a major health care problem and becoming a serious threat to mankind. Worldwide, the incidences of Diabetes mellitus are increasing day by day along with various secondary complications that's why its management is considered as a challenging task for all physicians. Conventionally plenty of anti-diabetic agents are available but due to their adverse effects there is a search for safer and effective anti-hyperglycaemic agents. From the earliest times, plants have been an exemplary source of medicine. A lot of descriptions of Plants having anti-diabetic properties are described in various classical Ayurvedic texts. Extensive researches are being carried out in last few decades to establish the claim made by ancient literature; still many remain to be evaluated. The aim of this review to compile the data of plants having anti-diabetic properties described in various Nighantus (Ayurvedic Materia Medica) which can be used as ready reckoner for research as well as clinical purpose. In this review total seventy four plants having anti-diabetic properties are summarized.

Key words: Nighantu; Prameha; Diabetes; Medicinal plants; Anti-hyperglycaemic.

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INTRODUCTION

Diabetes mellitus (DM) refers to a group of common metabolic disorders that share the phenotype of hyperglycaemia. Several distinct types of DM exist and are caused by a complex interaction of genetics and environmental factors. Depending on the etiology of the DM, factors contributing to hyperglycaemia include reduced insulin secretion, decreased glucose utilization, and increased glucose production. The metabolic dysregulation associated with DM causes secondary pathophysiologic changes in multiple organ systems that impose a tremendous burden on the individual with diabetes and on the health care system.[1] WHO projects death due to diabetes will be double between 2005 and 2030.The prevalence of diabetes for all age-groups worldwide was estimated as 2.8% in 2000 and will be 4.4% in 2030.The total number of people with diabetes is projected to rise from 171 million in 2000 to 366 million in 2030.[2][3]

Many synthetic hypoglycaemic agents are currently available but they are either too expensive or produce undesirable side effects on chronic use.[4] Plants and plant derived compounds have a great potential to cure and control diabetes, additionally they are safer and cost effective. Many plants have been investigated for their beneficial effects in treating Diabetes as reported in various scientific journals. The active components present in medicinal plants have been reported to possess pancreatic beta cells re-generating, insulin releasing and fighting the problem of insulin resistance.[5] Hypoglycaemic herbs increase insulin secretion, enhance glucose uptake by adipose or muscle tissues and inhibit glucose absorption from intestine and glucose production from liver.[6]

In Ayurveda, the traditional Indian system of medicine treating diabetes (Prameha) with various plants and plant based medicines since time immemorial and they are well documented in different Ayurvedic Classics but not available at a glance for general public as well as for scientific community for evaluating the claims. So, there is a need to document such information in the form of a database.

MATERIALS AND METHODS

Although there are lots of Nighantus (Ayurdic materia medica) available in Ayurveda only eight nighantus viz Madanpal Nighantu (M.N.), Raja Nighantu (R.N.), Dravyaguna Samgraha (Dra.S.), Bhavaprakasha Nighantu (B.N.), Dhanwantari Nighantu (D.N.), Kayadeva Nighantu (K.N.), Madhava Dravyaguna (Ma.Dg.) and Sodhala Nighantu (S.N.) were selected based on the popularity of general use. Each and every chapter of these nighantus were screened for the plants having anti diabetic properties (i.e. Pramehaghna, Prameha hara, Mehaghna, Meha hara). All these plants were summarized and given in Table 1.

DISCUSSION AND CONCLUSION

In Ayurveda, about 2000 plant species are considered to have therapeutic medicinal value.[185] Out of these 400 plants are being considered as having hypoglycaemic properties and several of these still remain scientifically or clinically unproven.[186][187] In present paper, the drugs compiled from various Ayurvedic Nighantus is not only exclusively possessing hypoglycaemic effects, but also can be effective on complication of diabetes and prevention the disorder as well. Apart from this some of above mentioned drugs are considered to have rich dietary nutritive value, (e.g. – Kshirvidari, Varahikanda, Pindalu, Chilli etc.) which may maintain the homeostasis in healthy people and restores it quickly from pathological states in diabetic population. Apart from the above summarized form, another 2 drugs Nadikanta (K.N.) and Katambhar (M.N. & K.N.) are also

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Table 1: Documentation of Anti-diabetic drugs in different Nighantus

Sl.no.	Plants	Latin name	M.N.	R.N.	Dra.S.	B.P.	D.N.	K.N.	Ma.Dg.	S.N.
1.	Arkapuspi	*Holastemone annularis* [7][78]	+	-	-	+	-	-	-	-
2.	Ashmantaka	*Bauhinia tomentosa*[42][107]	-	+	-	-	+	-	-	-
3.	Aragbadh	*Cassia fistula* [43][108][124]	-	+	-	-	+	+	-	-
4.	Amra	*Mangifera indica* [8][125]	+	-	-	-	-	+	-	-
5.	Amalaki	*Emblica officinalis*[44][79]	-	+	-	+	-	-	-	-
6.	Aruk	*Prunus persica*[9][45][109]	+	+	-	-	+	-	-	-
7.	Indrayana	*Citrullus colocynthis*[80][126]	-	-	-	+	-	+	-	-
8.	Eranda	*Ricinus communis*[127]	-	-	-	-	-	+	-	-
9.	Katphala	*Myrica esculanta*[10][81][110][128]	+	-	-	+	+	+	-	-
10.	Agnimantha	*Premna integrifolia*[177]	-	-	-	-	-	-	-	+
11.	Kasheruk	*Scirpus kaysoor*[129]	-	-	-	-	-	+	-	-
12.	Karanja	*Pongamia pinnata*[11][73][82][168]	+	-	+	+	-	-	+	-
13.	Karavellaka	*Momordica charantia*[12][130]	+	-	-	-	-	+	-	-
14.	Kapitthpatri	*Limonia crenulata*[13]	+	-	-	-	-	-	-	-
15.	Koshataki	*Luffa acutangula*[14][131]	+	-	-	-	-	+	-	-
16.	Kantakari	*Solanum suratance*[132]	-	-	-	-	-	+	-	-
17.	Kampilaka	*Mallotus philippinensis*[83][133]	-	-	-	+	-	+	-	-
18.	Kapitthpatra	*Limonia acidissima*[134]	-	-	-	-	-	+	-	-
19.	Kusmanda	*Benincasa hispida*[46]	-	+	-	-	-	-	-	-
20.	Khadira	*Acacia catechu*[15][135][169]	+	-	-	-	-	+	+	+
21.	Gojihwa	*Onosma bracteatum*[16][84][136]	+	-	-	+	-	+	-	-
22.	Kutki	*Picrorhiza kurroa*[85][137]	-	-	-	+	-	+	-	-
23.	Gopalkarkati	*Cucumis melo*[47]	-	+	-	-	-	-	-	-
24.	Gokshura	*Tribulus terrestris*[17][72][86][111][138]	+	+	-	+	+	+	-	-
25.	Guggulu	*Commifora wightii*[18][87][139][170][179]	+	-	-	+	-	+	+	+
26.	Guduchi	*Tinospora cordifolia*[48][112][140]	-	+	-	-	+	+	-	-
27.	Gajakarni	*Leea microphylla*[141]	-	-	-	-	-	+	-	-
28.	Chilli	*Chenopodium murale*[49]	-	+	-	-	-	-	-	-
29.	Jatiphala	*Myristica fragrans*[50]	-	+	-	-	-	-	-	-
30.	Tinduka	*Diospyros peregrina*[20][171]	+	-	-	-	-	+	-	-
31.	Tuvaraka	*Hydnocarpus laurifolia*[19][142]	+	-	-	-	-	+	-	-
32.	Tinisha	*Ougeinia dalbergioldes*[88][143]	-	-	-	+	-	+	-	-
33.	Daruharidra	*Berberis aristata*[51][122]	-	+	-	-	+	-	-	-
34.	Durva	*Cynodon dactylon*[172]	-	-	-	-	-	-	+	-
35.	Devadaru	*Cedrus deodara*[52][89][113][144]	-	+	-	+	+	+	-	-
36.	Devadali	*Luffa echinata*[21]	+	-	-	-	-	-	-	-
37.	Dhanwayasa	*Fagonia cretica*[53][114]	-	+	-	-	+	-	-	-
38.	Nimba	*Azadirachta indica*[22][74][90][145][173]	+	-	+	+	-	+	+	-
39.	Pippali	*Piper longum*[23][91][146]	+	-	-	+	-	+	-	-
40.	Palasha	*Butea monosperma*[24][75][92][147][174]	+	-	+	+	-	+	+	-
41.	Pasanbheda	*Bergenia ligulata*[25][54][93][148]	+	+	-	+	-	+	-	-
42.	Pindalu	*Dioscorea alata*[55][149]	-	+	-	-	-	+	-	-
43.	Paribhadra	*Erythrina indica* [175]	-	-	-	-	-	-	+	-
44.	Bakuchi	*Psoralia corylifolia*[26][94][150]	+	-	-	+	-	+	-	-
45.	Brahmi	*Bacopa monnieri*[27][95]	+	-	-	+	-	-	-	-
46.	Bijaka	*Pterocarpus marsupium*[28][151]	+	-	-	-	-	+	-	-
47.	Bhudhatri	*Phyllanthus niruri*[56]	-	+	-	-	-	-	-	-

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48.	Bhallataka	*Semecarpus anacardium*[29][57]	+	+	-		-	-	-	-
49.	Mundi	*Sphaeranthus indicus*[58]	-	+	-	-	-	-	-	-
50.	Kakamachi	*Solanum nigrum*[30][152]	+	-	-	-	-	+	-	-
51.	Mahanimba	*Melia azedarach*[96]	-	-	-	+	-	-	-	-
52.	Mesasringi	*Gymnema sylvestre*[153]	-	-	-	-	-	+	-	-
53.	Murva	*Marsdenia tenacissima*[31][59][97][115][154]	+	+	-	+	+	+	-	-
54.	Manjistha	*Rubia cordifolia*[32][60][98][116][155]	+	+	-	+	+	+	-	-
55.	Rajadan	*Mimusops hexandra*[61]	-	+	-	-	-	-	-	-
56.	Rudanti	*Capparis moonii*[62]	-	+	-	-	-	-	-	-
57.	Rasona	*Allium sativum*[33][76][156][180]	+	-	+	-	-	+	-	+
58.	Latakaranja	*Caesalpinia crista*[34][99]	+	-	-	+	-	-	-	-
59.	Vasa	*Adhatoda zeylanica*[35][100][157]	+	-	-	+	-	+	-	-
60.	Varahikanda	*Puraria tuberosa*[36][63][77][101][158][181]	+	+	+	+	-	-	+	+
61.	Vidhara	*Argyreia speciosa*[37][102][117][159]	+	-	-	+	+	+	-	-
62.	Vansha	*Bambusa arundinacea*[64]	-	+	-	-	-	-	-	-
63.	Vidanga	*Embelia ribes*[160]	-	-	-	-	-	+	-	-
64.	Betrak	*Calamus tenuis*[161]	-	-	-	-	-	+	-	-
65.	Shalaparni	*Desmodium gangeticum*[65][118][162]	-	+	-	-	+	+	-	-
66.	Simsapa	*Dalbergia sissoo*[38][119]	+	-	-	-	-	-	-	-
67.	Suvarchala	*Gynandropsis Pentaphylla*[39][103][163]	+	-	-	+	-	+	-	-
68.	Sthalkamala	*Ionidium suffruticosum*[66]	-	+	-	-	-	-	-	-
69.	Snuhi	*Euphourbia neriifolia*[67][164][176][182]	-	+	-	-	-	+	+	+
70.	Sprukka	*Delphinium zalil*[68]	-	+	-	-	-	-	-	-
71.	Sariva	*Hemidesmus indicus*[69][123]	-	+	-	-	+	-	-	-
72.	Haritaki	*Terminalia chebula*[40][104][120][165][183]	+	-	-	+	+	+	-	+
73.	Haridra	*Curcuma longa*[41][70][105][121][166][184]	+	+	-	+	+	+	-	+
74.	Kshiravidari	*Ipomoea digitata*[71]	-	+	-	-	-	-	-	-

+ stands for documented; - Stands for not documented

documented as anti-diabetic but the exact botanical identity is not clear. Compound formulations are more preferred against single drug in general trend of Ayurvedic practice because the multifactorial disease demands a multimodal therapeutic approach, but *Momordia charantia, Gymnema sylvestre, Pterocarpus marsupium, Trigonella foenum-graecum, Azadiracta indica, Enicostema littorale, Tinospora cordifolia, Curcuma longa, Picrorrhiza kurroa, Emblica officinalis, Citrullus colocynthis* are used individually among the peoples in order to combats Diabetes. It is a hour of need to evaluate and establish the safety and efficacy of these drugs at various scientific parameter viz. biochemical investigations, therapeutic and toxicological assessment (by developing animal model), analysis of active component of single drug &validating molecular interaction among formulations. Thus the new herbal anti-diabetic drugs developed through these processes may overcome the side effects, toxicity of synthetic drugs and may prove a comprehensive natural remedy.

REFERENCES

1. Anthony FS, Braunwald E, Kasper DL, Hauser HL, Longo DL, Jomeson JL, et. Al. Harrison's Principles of Internal Medicine. 17th ed. USA: Mc Graw Hill Publication; 2008.p.2275.
2. Azizi F, Guoya MM, Vazirian P, Dolatshati P, Habbibian S. Screening for type 2 diabetes in the

Iranian national programme: A preliminary report. East Mediterr Health J. 2003; 9:1122–7.
3. Hussain A, Vaaler S, Sayeed MA, Mahtab H, Ali SM, Khan AK. Type 2 diabetes and impaired fasting blood glucose in rural Bangladesh: A population-based study. Eur J Public Health. 2007; 17:291–6.
4. Rang HP, Dale MM. The Endocrine System Pharmacology. 2nd ed. Harlow, UK: Longman, 1991. p.504.
5. Welihinda J, Arvidson G, Gylfe E, Hellman B, Karlsson E. The insulin-releasing activity of the tropical plant momordica charantia. Ada Biol MetLGer 1982; 41:1229-40.
6. Hui H, Tang G and Liang V. Hypoglycemic herbs and their action mechanisms. Chin Med 2009; 4: 11-14.
7. Upadhyaya R, editor. Madanpala Nighantu. 1st ed. Mumbai: Khemraj Srikrishnadas Press; 2004. Abhayadi varga 79.p.51.
8. Ibid. Phaladi varga 6-7.p.122.
9. Ibid. Abhayadi varga 44. p.128.
10. Ibid.Vatadi varga 202-203.p.37.
11. Ibid. Vatadi varga 61.p.121.
12. Ibid. Saka varga 28.p.145.
13. Ibid. Phaladi varga 92.p.137.
14. Ibid. Saka varga 19.p.144.
15. Ibid. Vatadi varga 30.p.113.
16. Ibid. Abhayadi varga 92.p.53-54.
17. Ibid. Abhayadi varga 59-60.p.11.
18. Ibid. Karpuradi varga 45-48.p.84.
19. Ibid. Phaladi varga 74.p.133.
20. Ibid. Phaladi varga 42.p.126.
21. Ibid. Abhayadi varga 57-58.p.47.
22. Ibid. Abhayadi varga 38-39.p.25.
23. Ibid. Sunthyadi varga 12-13.p.66.
24. Ibid. Vatadidi varga 40.p.115.
25. Ibid. Abhayadi varga 208-209.p.38.
26. Ibid. Abhayadi varga 234-236.p.42.
27. Ibid. Abhayadi varga, 286-287.p.52.
28. Ibid. Vatadi varga, 35.p.114.
29. Ibid. Paniyadi varga, 153.p.182.
30. Ibid. Abhayadi varga, 250-251.p.45.
31. Ibid. Abhayadi varga, 24.p.40.
32. Ibid. Abhayadi varga, 26-27.p.41.
33. Ibid. Phaladi varga, 74-76.p.154.
34. Ibid. Vatadi varga, 62.p.171.
35. Ibid. Karpuradi varga, 91.p.93.
36. Ibid. Abhayadi varga, 220-221.p.40.
37. Ibid. Abhayadi varga, 255-256.p.46.
38. Ibid. Vatadi varga, 68-69.p.120.
39. Ibid. Abhayadi varga, 288-289.p.51.
40. Ibid. Abhayadi varga, 23.p.5.
41. Ibid. Abhayadi varga, 229.p.41.
42. Tripathi I, editor. Raja Nighantu. 4th ed. Varanasi: Chowkhamba Krishnadas Academy; 2006. Prabhadradi varga, 39-41.p.271.
43. Ibid. Prabhadradi varga, 44-47.p.273.
44. Ibid. Amradi varga, 156-161.p.371.
45. Ibid. Amradi varga, 98-99.p.359.
46. Ibid. Mulakadi varga, 160-161.p.218.
47. Ibid. Guduchyadi varga, 104-105.p.50.
48. Ibid. Guduchyadi varga, 1-18.p.31.
49. Ibid. Mulakadi varga, 126-130.p.211.
50. Ibid. Chandanadi varga, 77-78.p.411.
51. Ibid. Pipalyadi varga, 199-202.p.175.
52. Ibid. Chandanadi varga, 29-32.p.400.
53. Ibid. Shatahwadi varga, 53-55.p.72.
54. Ibid. Parpatadi varga, 39-46.p.112.
55. Ibid. Mulakadi varga, 70.p.201.
56. Ibid. Parpatadi varga, 91-93.p.123.
57. Ibid. Amradi varga, 66-69.p.352.
58. Ibid. Parpatadi varga, 17-21.p.108.
59. Ibid. Guduchyadi varga, 19-21.p.32.
60. Ibid. Pipalyadi varga, 190-195.p.174.
61. Ibid. Amradi varga, 70-72.p.354.
62. Ibid. Parpatadi varga, 60-61.p.116.
63. Ibid. Mulakadi varga, 85-88.p.204.
64. Ibid. Mulakadi varga, 34-36.p.195.
65. Ibid. Shatahwadi varga, 20.p.65.
66. Ibid. Parpatadi varga, 81-83.p.121.
67. Ibid. Shalmalyadi varga, 49-52.p.141.
68. Ibid. Chandanadi varga, 126-128.p.421.
69. Ibid. Chandanadi varga, 117-121.p.420.
70. Ibid. Pipalyadi varga, 196-199.p.175.
71. Ibid. Mulakdi varga, 102-105.p.206.
72. Ibid. Shatahwadi varga, 40-43.p.69.
73. Yadavji Trikamji, Sonare C. Dravyaguna Samgraha. 1st ed. Varanasi: Chowkhamba Orientalia; 2006. Phala varga, 44-45.p.131.
74. Ibid. Phala varga, 44-45.p.131.
75. Ibid. Phala varga, 44-45.p.131.
76. Ibid. Lavanadi varga, 20-23.p.114.
77. Ibid. Shaka varga, 47.p.101.
78. Chunekar KC. Bhavaprakasha Nighantu. 1st ed. Varanasi: Chowkhamba Bharti Academy; 2010. Guduchyadi varga, 271.p.441.
79. Ibid. Haritakyadi varga, 39.p.10.
80. Ibid. Guduchyadi varga, 203-205.p.389.
81. Ibid. Haritakyadi varga, 180-181.p.97.
82. Ibid. Guduchyadi varga, 122.p.335.
83. Ibid. Haritakyadi varga, 147.p.64.
84. Ibid. Guduchyadi varga, 297-298.p.456.
85. Ibid. Haritakyadi varga, 149-152.p.67.
86. Ibid. Guduchyadi varga, 44-46.p.279.
87. Ibid. Karpuradi varga, 38-40.p.195.
88. Ibid. Vatadi varga, 76.p.536.
89. Ibid. Karpuradi varga, 24-25.p.187.
90. Ibid. Guduchyadi varga, 95-96.p.314.
91. Ibid. Haritakyadi varga, 54-55.p.15.
92. Ibid. Vatadi varga, 52-53.p.524.
93. Ibid. Haritakyadi varga, 184-185.p.101.
94. Ibid. Haritakyadi varga, 208.p.118.
95. Ibid. Guduchyadi varga, 279-281.p.446.

96. Ibid. Guduchyadi varga, 97-99.p.317.
97. Ibid. Guduchyadi varga, 244-245.p.419.
98. Ibid. Haritakyadi varga, 188-191.p.106.
99. Ibid. Guduchyadi varga, 121-122.p.335.
100. Ibid. Guduchyadi varga, 88-89.p.306.
101. Ibid. Guduchyadi varga, 177-179.p.372.
102. Ibid. Guduchyadi varga, 1-2.p.395.
103. Ibid. Guduchyadi varga, 284-286.p.450.
104. Ibid. Haritakyadi varga, 19-20.p.5.
105. Ibid. Haritakyadi varga, 196-197.p.110.
106. Ibid. Guduchyadi varga, 123-124.p.338.
107. Sharma PV. Dhanwantari Nighantu. 1st ed. Varanasi: Chowkhamba Bharti Academy; 2005. Guduchyadi varga, 192-193.p.51.
108. Ibid. Guduchyadi varga, 215-216.p.55.
109. Ibid. Amradi varga, 32.p.154.
110. Ibid. Guduchyadi varga, 74.p.26.
111. Ibid. Guduchyadi varga, 103.p.34.
112. Ibid. Guduchyadi varga, 1-4.p.16.
113. Ibid. Guduchyadi varga, 75-76.p.26.
114. Ibid. Guduchyadi varga, 16-20.p.18.
115. Ibid. Guduchyadi varga, 12-13.p.18.
116. Ibid. Guduchyadi varga, 16-18.p.18.
117. Ibid. Karaviradi varga, 95-96.p.138.
118. Ibid. Guduchyadi varga, 87-88.p.31.
119. Ibid. Amradi varga, 111-112.p.169.
120. Ibid. Guduchyadi varga, 202-203.p.53.
121. Ibid. Guduchyadi varga, 54-55.p.25.
122. Ibid. Guduchyadi varga, 56-59.p.26.
123. Ibid. Guduchyadi varga, 158-161.p.48.
124. Sharma PV. Kaiyadeva Nighantu. 1st ed. Varanasi: Chowkhamba Orientalia; 2006.p. Ousadhi varga, 942-944.p.174.
125. Ibid. Ousadhi varga, 334-337.p.63.
126. Ibid. Ousadhi varga, 1024-1028.p.190.
127. Ibid. Ousadhi varga, 113-116.p.24.
128. Ibid. Ousadhi varga, 1136-1138.p.210.
129. Ibid. Ousadhi varga, 1617-1619.p.645.
130. Ibid. Ousadhi varga, 588-593.p.107.
131. Ibid. Ousadhi varga, 568-572.p.104.
132. Ibid. Ousadhi varga, 52-53.p.13-14.
133. Ibid. Ousadhi varga, 948-950.p.175.
134. Ibid. Ousadhi varga, 419-421.p.77-78.
135. Ibid. Ousadhi varga, 821-824.p.143.
136. Ibid. Ousadhi varga, 764.p.136.
137. Ibid. Ousadhi varga, 1126.p.208.
138. Ibid. Ousadhi varga, 68-70.p.16.
139. Ibid. Ousadhi varga, 1408.p.261.
140. Ibid. Ousadhi varga, 7-11.p.5.
141. Ibid. Ousadhi varga, 1634.p.647.
142. Ibid. Ousadhi varga, 504.p.82.
143. Ibid. Ousadhi varga, 816.p.152.
144. Ibid. Ousadhi varga, 1610.p.242.
145. Ibid. Ousadhi varga, 884.p.163.
146. Ibid. Ousadhi varga, 1169.p.215.
147. Ibid. Ousadhi varga, 831-836.p.155.
148. Ibid. Ousadhi varga, 1146.p.212.
149. Ibid. Ousadhi varga, 1625.p.645.
150. Ibid. Ousadhi varga, 705-707.p.130.
151. Ibid. Ousadhi varga, 811-814.p.151.
152. Ibid. Ousadhi varga, 708-711.p.131.
153. Ibid. Ousadhi varga, 739.p.136.
154. Ibid. Ousadhi varga, 787.p.145.
155. Ibid. Ousadhi varga, 1427.p.264.
156. Ibid. Ousadhi varga, 1221.p.225.
157. Ibid. Ousadhi varga, 12-14.p.6.
158. Ibid. Ousadhi varga, 1583.p.638.
159. Ibid. Ousadhi varga, 1578.p.637.
160. Ibid. Ousadhi varga, 1148.p.212.
161. Ibid. Ousadhi varga, 1252.p.231.
162. Ibid. Ousadhi varga, 44-46.p.12.
163. Ibid. Ousadhi varga, 643-655.p.121.
164. Ibid. Ousadhi varga, 917-921.p.170.
165. Ibid. Ousadhi varga, 221-225.p.45.
166. Ibid. Ousadhi varga, 1115.p.206.
167. Sharma PV. Madhava Dravyaguna. Varanasi: Chowkhamba Vidya Bhavan; 1973. Vividha Ousadhi varga, 81.p.6.
168. Ibid. Vividha Ousadhi varga, 107.p.8.
169. Ibid. Vividha Ousadhi varga, 18.p.2.
170. Ibid. Vividha Ousadhi varga, 35.p.3.
171. Ibid. Phala varga, 7.p.46.
172. Ibid. Vividha Ousadhi varga, 104.p.8.
173. Ibid. Vividha Ousadhi varga, 107.p.8.
174. Ibid. Vividha Ousadhi varga, 107.p.8.
175. Ibid. Vividha Ousadhi varga, 68.p.5.
176. Ibid. Vividha Ousadhi varga, 29.p.3.
177. Pandey G. Sodhala Nighantu. Varanasi: Chowkhamba Krishnadas Academy; 2009. Guduchyadi Varga, 152-155.p.205.
178. Ibid. Guduchyadi Varga, 126.p.198.
179. Ibid. Dhatwadi Varga, 365.p.257.
180. Ibid. Karaviradi Varga, 419.p.266.
181. Ibid. Amradi Varga, 537.p.290.
182. Ibid. Guduchyadi Varga, 236.p.224.
183. Ibid. Guduchyadi Varga, 221.p.219.
184. Ibid. Guduchyadi Varga, 136.p.201.
185. Humber JM. The role of complementary and alternative medicine, accommodating pluralism. J. Am. Med. Assoc. 2002;288:1655–1656
186. Oliver BB. Oral hypoglycemic action of medicinal plants in tropical West Africa. 1st ed. London: Cambridge University Press; 1986.p.245-267.
187. Rai MK. A review on some antidiabetic plants of India. Ancient Science of Life 1995;14:42-54

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