



## Review Article

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### A DATA BASE STUDY OF DIET FOR OBESE DIABETES WITH SPECIAL REFERENCES TO DIABESITY

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#### ABSTRACT

The goals of maintainable blood sugar level, weight loss and sustainable nutrition of an Obese Diabetic patient, attainable by using dietary therapy, are principles of the management of Diabetes. Diabetes is a syndrome complex, which comprises Central obesity, Type 2 Diabetes Mellitus, Hypertension, Hyperlipidemia, Systemic inflammation and Prothrombotic state. Diet and Regimen have been considered to be the adoptable measures of the very first step for the management of Diabetes and obesity. 'Ayurveda', the science of life, flamboyantly describes the Ahara Dravyas to the Obese Diabetic (Sthula Pramehi) patients and calls those Dravyas preventive and therapeutics for them. Different types of cereals, pulses, vegetables, oils, fruits, liquids and others have been revealed in this study as having logistic effects in the obese Diabetic patients, though the effects depend on availability, economic condition, tolerance, desire, physical condition, level of digestion, and predominance of doshas of the Dravyas and the patients. In the present study, effort was made to rule out the Ahara Dravyas as prescribed by the ancient health providers of the Ayurvedic classics. The study revealed the Ahara Dravyas along with their ancient Indian pharmacological properties. The outcome of the study is expected to be helpful for future scholars, dieticians and patients also. The study concludes that the Ahara Dravyas can be used in different forms in day to day meals of the Obese Diabetic patients, provided the guidelines given by the Physician and Dietician are properly followed.

**Keywords:** Diabetes, Obesity, Diabetesy, Diet, Ahara Dravya

#### INTRODUCTION

T2DM (Type 2 Diabetes Mellitus) is one of the top ten leading causes of death. It has been predicted that the disease will affect almost 300 million of the world's population by 2025. According to the NCEP and IDF modified ATP III criteria, more than 50 % (50 % -70 %) Diabetic patients in India are overweight or obese and their risk is 6 %- 9.5 %<sup>1</sup>. Indeed, Obesity and Diet are considered to be the modifiable risk factor of Diabetes<sup>2</sup>. Life style intervention (Medical Nutrition Therapy- MNT and Physical activity are included) is one of the two major strategies ruled out for reducing the occurrence of T2DM. A change in life style, observation of Diabetic diet and avoidance of alcohol and smoking etc. are a few measures of the very first step of the management of Diabetes. Keys to the success of managing the program of diabetes, these measures can lead to a reduction of HbA1c by 0.5 to 2 %<sup>3</sup>. On the contrary, the state of pre obesity (over weight) and obesity depends upon both the dietary factor and life style.

#### Diabetes, Obesity and Diabetesy

The diseases 'Diabetes' and 'Obesity', derived from the word 'Diabetesy'<sup>4</sup>, are defined as "a group of metabolic disorders characterized by hyperglycemia resulting from defects in insulin secretion, insulin action or both"<sup>5</sup> (defined by American Diabetes association in 1997 and accepted by WHO) and as "a condition in which there is an excessive amount of body fat" respectively<sup>6</sup>.

Diabetesy is a metabolic syndrome complex comprising T2DM/IGT, central obesity (waist circumference >90 cm and >80 cm in a male and a female respectively), HTN, Systemic inflammation and pre-thrombotic state.

Ayurveda defines obesity as 'Sthula', a "condition of excessive deposition of fat muscle in buttock and breasts, development of different body parts unequally and lack of enthusiasm". Keeping the view of importance and role of life style and diet in Diabetes and Obesity, a portmanteau word 'Diabetesy' has been used in this study to explore the food items recommended for Obese Diabetic patients by the ancient health providers, viz., Charaka, Sushruta etc. in both allopathic and Ayurvedic classics for the benefit of the patients, health providers, dieticians and research scholars in the coming era. The ancient erudite used the principle of diet application for all types of Prameha, including Madhumeha (T2 Diabetes), to enhance the agni and to reduce the Meda and Kleda, meaning low caloric diet and low Glycemic index. To get an enhancing effect of agni and reducing effect of Meda and Kleda, they prescribed Ahara Dravyas, which included the katu, tikta and kasaya in Rasa; laghu, ruksha and tikhna in Guna; ushna in Virya and katu in Vipaka. It is guessed that these Ahara Dravyas have low caloric and low glycemic index. Modern medical science puts emphasis on calorie and glycemic index for the treatment of Diabetes and Obesity. It is stated in Charaka Samhita that, if a person consumes such food and uses the regimen for maintaining the equilibrium / homogenous state of the dhatus, he will never suffer from Prameha, excluding Jata Prameha<sup>7</sup>. The goal of diet in obese diabetes can be stated as:

#### Goal of Diet

Control of blood parameters and reduction of calorie value can improve the condition of diabetic.<sup>8</sup>

- Maintenance of normal blood sugar and serum lipid level.
- Improvement of overall nutrition.
- Prevention and postponement of complication.
- Reduction of 500-600 calories/day.

#### Inclusion Criteria of Properties of Diet (Ahara Dravya) for Obese Diabetes

- Apararpaniya Dravya (Desaturating diet)
- Ruksha dravya
- Ushna virya
- Diet, which mitigates the vata, slesma and meda
- Katu, tikta and kasaya in taste
- Katu vipaka
- Meat-Jungle animal

#### Inclusion Criteria of Choice of Diet (Ahara Dravyas)

The Ahara vargas, screened and selected from different Ayurvedic classics, were based on

- (i) Availability and (ii) Properties of the Dravyas and (iii) Economic condition, (iv) Tolerance to the dravyas, (v) Physical condition, (vi) Desire, (vii) Level of digestive power and (viii) Predominance of the doshas of the patient.

The Ahara vargas are

- Cereals (Sukadhanya varga),
- Pulses (Samidhanya varga),
- Vegetables (Saka varga),
- Oil (Sneha varga),
- Fruits (Phala varga),
- Liquid (Paniyavarga, Mutra varga, Madya varga) etc.

#### The Selections from the Ahara Dravyas

Table 1: Ahara dravyas recommended for obese diabetes

SN	English Name	Sanskrit Name	Rasa	Guna	Virya	Vipak
1	Asafoetida <sup>9</sup>	Hing	Katu	Laghu, Snigdha, Tikhna	Ushna	Katu
2	Bael fruit <sup>10</sup>	Bilwa	Kasaya, Tikta	Laghu, Ruksha	Ushna	Katu
3	Barley <sup>11</sup>	Yava	Guru	Shita	Katu	Katu
4	Bittergourd <sup>12</sup>	Karabellaka	Tikta Katu,	Laghu, Ruksha	Ushna	Katu
5	Carrot <sup>13</sup>	Shikhamulam	Madhur, Tikta	Tikhna Laghu	Ushna	Katu
6	Chicken <sup>14</sup>	Kukkuta	Kashaya	Guru, Snigdha	Ushna	Katu
7	Cucumber <sup>15</sup>	Trapusha	Madhura,	Laghu, Ruksha	Shita	Madhura
8	Cumin Seed <sup>16</sup>	Jiraka	Katu,	Laghu, Ruksha	Ushna	Katu
9	Cluster fig <sup>17</sup>	Udumbara	Kashaya	Guru Ruksha	Shita	Katu
10	Fenugreek <sup>18</sup>	Methi	Katu,	Laghu, Snigdha	Ushna	Katu
11	Fish (River and pond) <sup>19</sup>	Matshya	Madhura,	Snigdha, Guru	Ushna	Madhura
12	Garlic <sup>20</sup>	Lasun	Madhura, Lavan, Katu, Tikta, Kasaya (Katu Pradhan)	Snigdha Tikhna, Picchila, Guru, Sara.	Ushna	Katu
13	Ginger <sup>21</sup>	Sunthi	Katu	Laghu, Snigdha (Sunthi), Guru Ruksha, Tikhna (Adrak)	Ushna	Madhura
14	Green peas <sup>22</sup>	Vartula	Kashaya, Madhura	Guru	Shita	Madhura
15	Green Gram <sup>23</sup>	Mung Dal	Kashaya, Madhura	Laghu	Shita	Katu
16	Horse Gram <sup>24</sup>	Kulattha	Kashaya	Laghu, Ruksha, Tikhna	Ushna	Katu
17	Indian Gooseberry <sup>25</sup>	Amla	Madhura, Amla, Katu, Tikta, Kasaya	Guru, Ruksha, shita	Shita	Madhura
18	Indian persimon <sup>26</sup>	Tinduka	Kasaya	Ruksha, Laghu	Shita	Katu
19	Jambul <sup>27</sup>	Rajaphala	Kasaya, Madhura, Amla	Laghu, Ruksha	Shita	-
20	Lady's finger <sup>28</sup>	Bhenda	Madhura	Shita, Guru, Snigdha	Shita	Madhura
21	Luke warm water <sup>29</sup>	Ushnodak	-	Laghu	Shita	Madhura
22	Mustard <sup>30</sup>	Sarsapa	Katu, Tikta	Snigdha (Oil), Tikhna, Ruksha (Sak)	Ushna	Katu
23	Onion <sup>31</sup>	Palandu	Madhura, Katu	Guru, Tikhna, Snigdha	Esad ushna	Madhura
24	Persian Lilac <sup>32</sup>	Mahanimba	Tikta, Kasaya	Tikta, Kasaya	Shita	-
25	Radish <sup>33</sup>	Muli	Katu	Laghu	Ushna	Katu
26	Rock Salt <sup>34</sup>	Saindhav	Esat swadu	Laghu Ushna	Ushna	Katu
27	Old Sali rice <sup>35</sup>	Sali	Madhura	Snigdha, Guru, Laghu	Shita	Madhura
28	Spinach leaves <sup>36</sup>	Palokya	-	-	-	-
29	Tomato <sup>37</sup>	Tamator	-	-	-	-
30	Turmeric <sup>38</sup>	Haridra	Tikta, Katu	Laghu, Ruksha	Ushna	Katu
31	Whey <sup>39</sup>	Takra	Kasaya, Madhura, Amla	Laghu, Ruksha	Ushna	Madhura
32	Wild snake gourd <sup>40</sup>	Patola	Tikta	Laghu, Ruksha	Ushna	Katu

## CONCLUSION

It was observed in this study that 32 Ahara Dravyas of different species along with their functional properties may be ruled out as recommended for Obese Diabetes. The Rasas, viz., Katu, Tikta and Kasaya, were found in almost all the selected dravyas in this study, while the Gunas found in most of the dravyas were Laghu and Ruksha. The other Gunas, viz., Snigdha, Tikhna, Shita, Guru, Ushna, Sara and Picchila Gunas were less in number. The Viryas were Ushna and Shita, while the Vipakas were Katu and Madhura in the Ahara Dravyas. The Lavan and Amla Rasas were found as conjugate Rasas with other predominant Rasas. The data has been shown in Table 1. It was also observed that each variety of the Ahara dravyas, mentioned in the Ayurvedic texts of the ancient times, is still available in India. The current scenario reflects that some diseases like Diabetes and Obesity are more prone to develop due to wrong adoption of life style and diet. As a result, like some other ill health conditions, Diabetes need to be prevented with the help of proper Diet and Regimen. The study suggested that all obese diabetes patients can take these Ahara Dravyas of various forms in their day to day meals easily, instead of taking unplanned diet. Its further scope may be enjoyed by the researcher in enlightening the pharmacokinetics and pharmacodynamics of these dravyas. It is guessed that the calorie and Glycemic index of these dravyas may be low. The Ahara dravyas found to be effective by the study and this may be considered by the health providers, dieticians, patients and coming research scholars as effective Ayurvedic foodstuffs for Diabetes.

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