

## Critical Analysis of Caloric And Glycemic Index of Sushrutokta Pro & Anti Diabetic Food Stuff

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### Abstract:

In the whole world, nearly about 24% of the population is suffering from diabetes. In India almost every third person is affected from diabetes and is becoming a global capital of diabetes. WHO emphasize that there is intense need to know the graveness of the disease and to understand the possible ways of preventive aspects of this disorder. Diabetes is referred as *Madhumeha* in Ayurveda which literally means a condition where there is increased frequency of sweet urine which is evident by ants to this type of urine. The credit of first describing this condition goes to ancient Indian medical science Ayurveda. Acharya Sushruta not only described the treatment of diabetes in great detail but also mentioned the various ways to prevent it through

healthy diet and lifestyle modification. Pro-diabetic and Anti-diabetic dietary significance mentioned mostly in Sushrut *Samhita* will be highlighted here.

### Keywords:

*Madhumeha*, gud vicar, glycemic

### Literary Review of Risk Factors Related To Diet

#### 1. Diet As Risk Factor Foor DM:

[S. Ni.6/3 & C.Chi.6/4]

The excessive consumption of sweet (*madhur*), unctuous (*snigdha*), fatty(*medya*), cold food (*cold*), milk (*payansi*), curd (*dadhi*), meat of aquatic and terrestrial animals (*gramya aanoop mans*), new grains like new rice, new wheat (*navanna*), Sugar and sugar based foods (gud vikar) and all the Kapha promoting food stuff are responsible for developing a diabetes in an individual.

## 2. Obesity As Risk Factor For DM :

(S.Chi.11/3)

The diabetic peoples are generally (*prayaha*) obese.

### Material & Method:

Literary review of Sushrutokta Pro-diabetic and Anti-diabetic dietary food stuff is carried out and caloric index of those on modern parameters is examined in detail:

### Strategy To Prevent DM- through Healthy diet:

It is important to center your diet on high-fiber, low-fat foods, Fruits, Vegetables, Whole grains, fewer animal products, refined carbohydrates and sweets, Foods with Low glycemic index .

- The glycemic index is a measure of how quickly a food causes a rise in your blood sugar. Foods with a high glycemic index raise blood sugar quickly.
- Low glycemic index foods may help you achieve a more stable blood sugar. And typically are higher in fiber.

### Foods to avoid in DM – Modern Concept:

- **Saturated fats.** High-fat **dairy products** and animal proteins such as **beef, sausage** contain saturated

fats. Get just 7 percent of daily calories from saturated fat.

- **Trans fats.** These types of fats are found in processed **snacks, baked goods**, and should be avoided completely.
- **Cholesterol.** Sources of cholesterol include high-fat **dairy products and high-fat animal proteins**, egg yolks, shellfish, liver, and other organ meats. Aim for no more than 300 mg of cholesterol a day.
- **Sodium.** Aim for less than 2,300 mg of sodium a day.

### Foods to avoid in DM – Sushrutokta Concept (S.Chi 11/5):

- **Alcoholic Drinks**  
(*Sura, Sauvirak, Tushodak, Maireyak, Shukt, Aasava*)
- **Sweets**  
(*Ikshu Vikar*)
- **Milk/Dairy Products**  
(*Paya, Ghrut, Dadhi*)
- **Oils**  
(*Taila*)
- **Flour of Cereals & Pulses**  
(*Pishtanna*)
- **Paste of sour food**  
(*Amla Yawagu,*)

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- **Non Veg food**  
(Gramya, Aanoop, Aaudak  
Mansa)

- **Sweet Beverages**  
(Panak)
- **Caloric Index of Dairy Products:**

Value per 100 g	Calories (kJ)	Saturated Fat	Mono Unsaturated Fat	Poly Unsaturated Fat	Trans fat	Protein	Ayurvedic Properties
Milk	251	1.9 g	0.8 g	0.2 g	0.0 g	3.2	Snigdha, Guru, <b>Kaphakarak</b>
Yoghurt	234	0.3 g	0.5 g	1.2 g	0.0 g	1.6 g	Snigdha, <b>Kaphakar</b>
Butter milk	205	0.5 g	0.3 g	0.05 g	0.0 g	4.0 g	<b>Kapha Shamak</b> , Laghu, Ushna
Butter	<b>3400</b>	<b>50.0 g</b>	23.0 g	3.2 g	0.0 g	0.7 g	<b>KaphaMeda Karak</b> ,
Ghee	<b>3665</b>	<b>62.0 g</b>	28.7 g	3.7 g	<b>4.0 g</b>	0.0 g	<b>KaphaKarak</b>

(SURA VIKAR)

**Caloric Index of Alcoholic Drinks :**

Alcohol Type	Calories	carbohydrate	Alcohol content	Prepared from fermentation	Ayurved Resemblance	Ayurved Properties
Red Wine	68	2.5	9.6	Grapes with Skin intact fermentation	Mardwik	<b>Brunhan</b> , Shoshnashak, jwar nashak
Whisky	207	00	29.6	Barley Water Yeast	Sura	<b>Kaphakarak</b> , Arsh Grahanihar
Vodka	207	00	29.6	From Sugar rich plants	Tushodak	Appetizer, Hrudya, Pandu
Brandy	207	00	29.6	Fermented fruit Juices	Mardwik	<b>Brunhan</b> , Shoshnashak,
Port	157	12	15.9	From grapes by portugeze	Mardwik	<b>Brunhan</b> , Shoshnashak,
Rum	207	00	29.6	sugarcane	Kohal	<b>Kaphashama</b>

				or molasses fermentatio n		k, Hrudya, Arsha, AdhmanSham ak
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**Mans Vikar (Animal Meats)**

- **A] Indicated Meats For Diabetics:** (S.Chi.11/6)
- The meat of forest animals like deer may be used after removing the fat from it and that too without ghee and sour things.

- **B] Contraindicated Meats For Diabetics :** (S.Chi.11/5)
- Gramya Mansa : -(Ex.- Goat, Lamb, Horse,Cow)
- Aanoop Mansa :- (Ex. Buffalow, Pig)
- Audak Mansa :- (Ex.- Fish, Duck, Crocodile)

**Caloric Index of Common Animal Products :**

Meat / 100 g	Calories	Carbohydrate	Fats	Proteins	Ayurvedokta Properties
Deer Meat	23.6	<b>1.4</b>	<b>149</b>	<b>16.86</b>	<b>Kapha Rog Nashak,</b> Hrudya, Balya
Beef	22.7	2.0	152	11.35	Vatanashak, Shwas,Kashar
Buffalo Meat	21.7	1.9	138	11.42	Snigdha, Ushna, Vrushya Guru, Balya
Horse Meat	28.1	6.1	175	4.64	Pitta Kapha Nashak, Guru
Chicken	24.4	1.9	121	12.84	Brunhan, Guru, Kshayhar
Lamb	20.8	<b>5.7</b>	<b>167</b>	<b>3.65</b>	Pitta Kapha Nashak, Guru, Brunhan
Pork	22.3	4.9	<b>165</b>	4.55	Snigdh, Vrushya Guru, Balya
Wild Boar	28.3	4.4	<b>160</b>	6.46	Vatanashak , Snigdh, Vrushya Guru, Balya
Rabbit Meat	21.8	2.4	144	9.08	Kapha-Pitta Nashak, Madhur Rasa
Partridge Meat	25.6	<b>0.7</b>	151	<b>36.57</b>	Sarv dosh nashak, ushna, madhur, vrushya

**Cooking Oils For Diabetics – Sushruta (S.Chi. 11/6)**

- 1. Ingudi (Desert Date - *Balanites aegyptiaca*)
- 2. Sarshap (Mustard - *Brassica nigra*)
- 3. Atasi (Flax Seed - *Linum usitatissimum*)

Cooking oil/ 100 g	Calories	Saturated Fat (%)	Mono Unsaturated Fat	Poly Unsaturated Fat	Ayurvedic Properties
<b>Ingudi</b> (Desert date oil)	884	12	63	20	<b>Kapha bala Nashak, Laghu,</b>
<b>Sarshap</b> (Mustard oil)	884	13	60	21	<b>Kapha Medahar, Laghu, Sthaulyahar,</b>
<b>Atasi</b> (Flax Seed oil)	884	11	21	61	<b>Pittakarak, Kapha Nashak, Snigdha</b>

**Caloric Value of Some Common Oils**

Cooking oil/ 100 g	Calories	Saturated Fat (%)	Mono Unsaturated F	Poly Unsaturated F	Ayurvedic Properties
Sesame oil	884	14	43	43	Vatanashak
Rice bran oil	884	20	39	34	-----
Soyabean oil	884	15	24	61	-----
Peanut oil	884	18	49	33	-----
Olive oil	884	14	73	11	-----
Almond	884	08	66	26	-----
Palm oil	884	<b>52</b>	38	10	-----
Coconut	884	<b>92</b>	06	02	Madhur,Sheetavirya,
Ghee	884	<b>65</b>	32	03	<b>Kaphakarak,Balya,</b>
Sunflower oil	884	11	20	69	Madhur,Sheetavirya,

**Food Grains/Cereals for Diabetics –As  
per Sushruta (S.Chi.11/8 and 12)**

- Old Shali Rice (*Oryza sativum*)
- *Yava* /Old Barley (*Hordeum vulgare*)
- *Godhum* / Old wheat (*Triticum aestivum*)

- *Kodrava* (Paspalum scrobiiculatum)
- *Shyamak* (Echinochola frumentacia)
- *Neewar* (Hygroryza aristata)

**Yava Barley (*Hordeum vulgare*) :** -

Barley is sweet, Kaphapittahar, scrapping and antiobesity. (S.Su.46/41-42). Barley is a grass family, cereal grain grown globally. It is a very good source of magnesium, manganese, dietary fiber and selenium, copper, vitamin B1, chromium, phosphorus.

**oat (*Avena sativa*)** -It is a secondary crop, i.e., derived from a weed of the primary cereal domesticates wheat and barley.

**Godhuma[wheat]** (*Triticum aestivum*) - It is sweet, heavy, nutritious, snigdha, sheeta, Kapha increasing in nature.  $\frac{1}{4}$ S.Su.48/41-42)

**Beans for Diabetics – As per Sushruta (S.Chi.11/6):**

- The following beans should be used **alternatively** :
- **Chanak** (Bengal Gram - *Cicer arietinum*)
- **Aadhki** (Red Gram - *Cajanus cajan*)
- **Kulatha** (Horse Gram - *Macrotyloma uniflorum*)
- **Mudga** (Green Gram - *Vigna radiata*)

**Caloric Index & Nutritional Value of Some Beans**

Beans/100 g	Calories	Carbohydrate	Fats	Proteins	Ayurvedic Properties
<b>Chana (Bengal gram)</b>	160	26.49 g	2.14 g	9.98 g	<b>Kaphanashak, Ruksha</b>
<b>Aadhki(Red gram)</b>	<b>335</b>	<b>58.0 g</b>	2.0 g	22.0 g	<b>Kapha Pitta Nashak</b>
<b>Kulthi (Horse gram)</b>	<b>321</b>	<b>57.0 g</b>	<b>0.00 g</b>	22.00 g	<b>Kapha Pitta Nashak,</b>
<b>Mung (Green gram)</b>	<b>30</b>	<b>5.94 g</b>	0.18 g	3.04 g	<b>Kapha pitta nashak,</b>

**Vegetables for Diabetics –As per Sushruta  $\frac{1}{4}$ S.Chi.11/6)**

- Diabetic patient should take bitter vegetables. (These are considered Kafanashak).

**Common Bitter Vegetables  $\frac{1}{4}$ S.Su.46/262 & 256)**

**Fruits For Diabetics – As per Sushruta(S.Chi 11/12 And S.Su.46/163-164)**

(Bitter Vegetables) Leaf	(Bitter Vegetables) Leaf	(Bitter Vegetables) fruit	Fruits For Diabetics
Tanduliyak (Chaulayi)	Mandukparni	Prapunnad (Panwad)	Amalaka
Vatsadani (Giloy)	Saptala	Patol (Padwal)	Kapitha
Upodak (Poyi)	Sunishannak	Wartyak(Baingan)	Tinduk
Ashwabala (Methi)	Kakamachi	Karwellak (Karela)	Ashmantak
Palankya (Palak)	Suwarchala	Koshataki (Lauki)	Jambu

### DISSCUSSION & OBSERVATION

The Ayurveda is of the view that all the Kaphakar food stuffs acts as risk factor for developing diabetes. Sushruta while mentioning the oils to be used by diabetic individuals, the cooking oils prescribed by him like Ingudi, Atsi and Sarshap are actually Kaphanashk and their saturated fat content is also low. Whereas the other oils which are kaphakar like Coconut , Ghee also has high saturated fat content. Similarly while describing ‘Mansa Varga’ , Sushruta asserts that all meats are Kaphakarak and should be avoided. If at all to be used then it should be used after removing the fat from their flesh. This is evident from their high fat content. Likewise while suggesting to avoid all alcohols to diabetics, Sushruta appears to be very right looking at very high content of calories in them and most of them are prepared from fruits or flours

with high sugar contents. From ayurvedic point of view almost all alcoholic preparations are Kapha Karak. While advocating the ‘*Kudhanya*’ (low nutritional value food grains and pulses), Sushruta appears to be very rationalistic as these food stuff are low in calories and are low Kaphakarak. While stating to avoid the overuse of dairy products by diabetics, Sushruta appears to be very right looking at their high caloric content. The vegetables and fruits so advocated for diabetics are those which have low glycemic index proven by nutritionist.

### CONCLUSION

1. Sushrutokta Prodiabetic food stuffs are high in caloric and carbohydrate content.
2. Sushrutokta Antidiabetic food stuffs are low in caloric and carbohydrate content.

3. The vegetables and fruits advocated by Sushruta for diabetics have low glyceic index.

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