

# Study on the production cost of sucralose induced low calorie dietetic Aloe vera *Kheer*

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The present study was undertaken with the objective to evaluate the cost of production of sucralose based aloe vera kheer. A total of 17 combinations of aloe vera and sucralose were prepared each in five replications including one as a control and remaining sixteen as experimental. All the standard ingredients used were purchased from local market. The results of the study revealed that the production cost of controlled *Kheer* was low (Rs. 52.87/lit milk) compared to sucralose induced Aloe vera *Kheer* (Rs. 72.87/ lit. milk).

**Key Words :** Aloe vera, Sucralose, Diabetes, Kheer

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## INTRODUCTION

Aloe vera has been used for many centuries for its curative and therapeutic properties (Habeeb *et al.*, 2007). Despite using it as a treatment in thermal and radiation burns locally, aloe extract (Brudner and Baranova, 1972 and Shinpo *et al.*, 1978) and aloe gel also exhibited anti-inflammatory and anti diabetic activity. Moreover, it has also been suggested that ingestion of aloe juice, presumably the gel, prevented pulmonary carcinogenesis, stomach and colon cancer (Sakai, 1989). Antibacterial, antifungal, and anti-viral activities have also been demonstrated by the gel (Klien and Penneys, 1988; Marshall, 1990 and Ahmad *et al.*, 1993).

In the food industry, it has been used as a source of functional foods and as an ingredient in other food products, for the production of gel-containing health

drinks and beverages. In the cosmetic and toiletry industry, it has been used as base material for the production of creams, lotions, soaps, shampoos, facial cleansers and other products.

The raw pulp of Aloe vera contains approximately 98.5 per cent water, while the mucilage or gel consists of about 99.5 per cent water (Eshun and He, 2004). The remaining 0.5-1 per cent solid material consists of a range of compounds including water-soluble and fat-soluble vitamins, minerals, enzymes, polysaccharides, phenolic compounds and organic acids (Boudreau and Beland, 2006).

Keeping into consideration the high nutritional and therapeutic significance of aloe-vera, a sucralose induced low calorie dietetic *Kheer* was developed which is suitable for diabetic patients. The present study was done with an objective to calculate the cost of production of various combinations of aloe vera and sucralose *Kheer*.

## METHODOLOGY

The present study was carried out in the Student's Training Dairy and research Lab, Warner School of Food

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and Dairy Technology, Sam Higginbottom Institute of Agriculture, Technology and Sciences, Allahabad, U.P. (India). For preparation of *Kheer*, milk, Basmati rice, sucralose, nuts, cardamom were procured of standard specification from the local market. Aloe vera was collected from local garden. Four different levels of sucralose and four different levels of aloe vera were used in preparation of various combinations of *Kheer*. There was total seventeen combination. Each was prepared in five replications. The different treatment combinations used in the experiment are as follows:

T<sub>0</sub> - Represent control *Kheer* prepared from milk having 4 per cent fat, 8.5 per cent SNF and 5 per cent sugar.

T<sub>1</sub> - Represent Low Calorie Dietetic *Kheer* prepared from milk having 4 per cent fat, 8.5 per cent SNF with addition of 2 per cent sucralose and 2 per cent aloe vera gel.

T<sub>2</sub> - Represent Low Calorie Dietetic *Kheer* prepared from milk having 4 per cent fat, 8.5 per cent SNF with addition of 2 per cent sucralose and 4 per cent aloe vera gel.

T<sub>3</sub> - Represent Low Calorie Dietetic *Kheer* prepared from milk having 4 per cent fat, 8.5 per cent SNF with addition of 2 per cent sucralose and 6 per cent aloe vera gel.

T<sub>4</sub> - Represent Low Calorie Dietetic *Kheer* prepared from milk having 4 per cent fat, 8.5 per cent SNF with addition of 2 per cent sucralose and 8 per cent aloe vera gel.

T<sub>5</sub> - Represent Low Calorie Dietetic *Kheer* prepared from milk having 4 per cent fat, 8.5 per cent SNF with addition of 4 per cent sucralose and 2 per cent aloe vera gel.

T<sub>6</sub> - Represent Low Calorie Dietetic *Kheer* prepared from milk having 4 per cent fat, 8.5 per cent SNF with addition of 4 per cent sucralose and 4 per cent aloe vera gel.

T<sub>7</sub> - Represent Low Calorie Dietetic *Kheer* with addition of milk having 4 per cent fat, 8.5 per cent SNF, 4 per cent sucralose and 6 per cent aloe vera gel.

T<sub>8</sub> - Represent Low Calorie Dietetic *Kheer* with addition of milk having 4 per cent fat, 8.5 per cent SNF and 4 per cent sucralose and 8 per cent aloe vera gel.

T<sub>9</sub> - Represent Low Calorie Dietetic *Kheer* with addition of milk having 4 per cent fat, 8.5 per cent SNF, 6 per cent sucralose and 2 per cent aloe vera gel.

T<sub>10</sub> - Represent Low Calorie Dietetic *Kheer* with addition of milk having 4 per cent fat, 8.5 per cent SNF, 6 per cent sucralose and 4 per cent aloe vera gel.

T<sub>11</sub> - Represent Low Calorie Dietetic *Kheer* with addition of milk having 4 per cent fat, 8.5 per cent SNF, 6 per cent sucralose and 6 per cent aloe vera gel.

T<sub>12</sub> - Represent Low Calorie Dietetic *Kheer* with addition of milk having 4 per cent fat, 8.5 per cent SNF and 6 per cent sucralose and 8 per cent aloe vera gel.

T<sub>13</sub> - Represent Low Calorie Dietetic *Kheer* with addition of milk having 4 per cent fat, 8.5 per cent SNF, 8 per cent sucralose and 2 per cent aloe vera gel.

T<sub>14</sub> - Represent Low Calorie Dietetic *Kheer* with addition of milk having 4 per cent fat, 8.5 per cent SNF, 8 per cent sucralose and 4 per cent aloe vera gel.

T<sub>15</sub> - Represent Low Calorie Dietetic *Kheer* with addition of milk having 4 per cent fat, 8.5 per cent SNF, 8 per cent sucralose and 6 per cent aloe vera gel.

T<sub>16</sub> - Represent Low Calorie Dietetic *Kheer* with addition of milk having 4 per cent fat, 8.5 per cent SNF and 8 per cent sucralose and 8 per cent aloe vera gel.

For the preparation of controlled *Kheer*, standardized buffalo milk (4 % Fat and 8.5 % SNF) was added with 5 per cent sugar 2.5 per cent rice of milk to prepare *Kheer*. For the preparation of experimental dietetic *Kheer*, standardized buffalo milk (4% Fat and 8.5 % SNF) was boiled for five minutes and added with 2.5 per cent pre cleaned rice. After that, addition of 2 per cent, 4 per cent, 6 per cent and 8 per cent sucralose was done and it was gently heated until the desired consistency achieved. After cooling at room temperature, 2 per cent, 4 per cent, 6 per cent and 8 per cent aloe vera gel was added. The *Kheer* was kept in refrigerator until used.

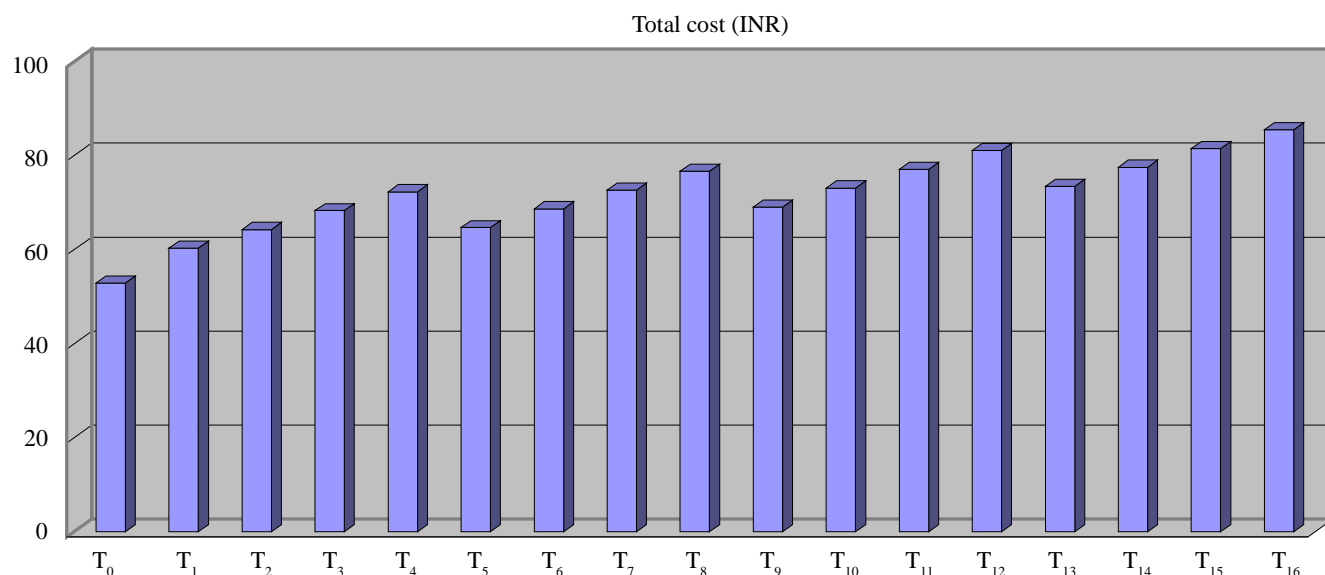
The cost of the prepared product was calculated at the prevailing prices of raw materials purchased from the local market of Allahabad. The data was analyzed statistically by using mean score.

## OBSERVATIONS AND ASSESSMENT

The cost of the ingredient is very important factor besides other factors in determining the cost of production. It is considered as a basis for price fixation and determining the profit. The price of a product is dependent on the cost of production. The cost of experimental Low Calorie Dietetic *Kheer* was calculated, which is shown in the Table 1 and Fig. 1. The mean

**Table 1 : Cost of production of low calorie dietetic kheer**

Treatments	Milk Rs. per liter	Basmati rice (Rs.)	Aloe vera (Rs.)	Sucralose (Rs.)	Sugar (Rs.)	Overhead exp. (Rs.)	Total cost Rs.
T <sub>0</sub>	40	1.87	0	0	1	10	52.87
T <sub>1</sub>	40	1.87	4	4.4	0	10	60.27
T <sub>2</sub>	40	1.87	8	4.4	0	10	64.27
T <sub>3</sub>	40	1.87	12	4.4	0	10	68.27
T <sub>4</sub>	40	1.87	16	4.4	0	10	72.27
T <sub>5</sub>	40	1.87	4	8.8	0	10	64.67
T <sub>6</sub>	40	1.87	8	8.8	0	10	68.67
T <sub>7</sub>	40	1.87	12	8.8	0	10	72.67
T <sub>8</sub>	40	1.87	16	8.8	0	10	76.67
T <sub>9</sub>	40	1.87	4	13.2	0	10	69.07
T <sub>10</sub>	40	1.87	8	13.2	0	10	73.07
T <sub>11</sub>	40	1.87	12	13.2	0	10	77.07
T <sub>12</sub>	40	1.87	16	13.2	0	10	81.07
T <sub>13</sub>	40	1.87	4	17.6	0	10	73.47
T <sub>14</sub>	40	1.87	8	17.6	0	10	77.47
T <sub>15</sub>	40	1.87	12	17.6	0	10	81.47
T <sub>16</sub>	40	1.87	16	17.6	0	10	85.47

**Fig. 1 : Cost of production of sucralose induced Aloe vera kheer at various proportions**

production cost of control *Kheer* was found Rs. 52.87 whereas for experimental *Kheer* it was obtained Rs. 72.87. The production cost ranged between Rs. 62.27 to 85.47 depending upon the proportion of the ingredients in experimental *Kheer*. It can also be observed that the highest mean cost (Rs.) was recorded in low calorie dietetic *Kheer* prepared with Aloe Vera, sucralose sample of T<sub>16</sub> (85.47) followed by T<sub>15</sub> (81.47), T<sub>12</sub> (81.07), T<sub>14</sub> (77.47), T<sub>11</sub> (77.07), T<sub>8</sub> (76.67), T<sub>13</sub> (73.47), T<sub>10</sub> (73.07),

T<sub>7</sub> (72.67), T<sub>4</sub> (72.27), T<sub>9</sub> (69.07), T<sub>6</sub> (68.67), T<sub>3</sub> (68.27), T<sub>5</sub> (64.67), T<sub>2</sub> (64.27), T<sub>1</sub> (60.27) and T<sub>0</sub> (52.87).

### Conclusion :

It can be concluded from the above study that sucralose induced Aloe vera *Kheer* can be prepared for diabetic patients. The cost of production is not very high compared to controlled *Kheer* prepared from milk, sugar and rice. So, it should be promoted for further production

keeping in view its therapeutic use.

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