Studies on Suitability of Herbs in Preparation of Burfi

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Received: 2.11.2015 | Revised: 6.12.2015 | Accepted: 11.12.2015

ABSTRACT
The study was undertaken to check the suitability of herbs in traditional khoa based product like Burfi with an objectives to determine its effect of chemical and microbial attributes, optimize the level of herb in Burfi, shelf life study and to estimate the cost of production of herbal Burfi. The combination of herbs Withania somnifera, Asparagus racemosus and Ocimum sanctum were added in the ratio of 5:4:1 in Burfi at the rate of 1, 1.25, 1.5 and 2 percent concentration on the basis of khoa. Herbal Burfi with 1.25% level of herbs was most acceptable on the basis of sensory score given by trained panel of judges. On the basis of highest sensory score Burfi with 1.25 % herbs was selected for storage studies. Samples were stored in paperboard and vacuum packed LDPE at the temperature of 6-8 °C for 7 days. In terms of chemical, microbial and sensory attributes vacuum packed herbal Burfi sample was superior to paper board sample. Cost of production of herbal Burfi was estimated as Rs. 230.62 per kg which was slightly higher than the control sample i.e. Rs. 223.92 per kg.

Key words: Burfi, Herb, Ashwagandha, Shatavari, Tulsi, Sensory attributes

INTRODUCTION
Ashwagandha (Withania Somnifera) is considered one of the most important herbs in ayurvedic system of medicines. Because of its vast area of application, ayurvedic physicians have used it extensively in helping people with their ailments. This plant is claimed to have potent aphrodisiac, rejuvenating and life prolonging properties. It has general animating and regenerative qualities and is used among others for the treatment of nervous exhaustion, memory related conditions, insomnia, tiredness potency issues, skin problems and coughing. It improves learning ability and memory capacity. It helps invigorate the body by rejuvenating the reproductive organs, just as a tree is invigorated by feeding the roots. Ashwagandha is chemically rich with its varied content of active compounds, such as steroidal lactones (withanolides), sitoindosides and many useful steroidal alkaloids, and used for centuries to treat a wide range of diseases.
Historically, Ashwagandha plant has been used as an aphrodisiac, sedative, liver tonic, diuretic, hypocholesterolic, anxiolytic, antidepressive, anti-inflammatory agent\(^1\).

Shatavari (Asparagus racemosus) is a well-known ayurvedic drug. The root of Shatavari is also used in the treatment of nervous disorders, dyspepsia, diarrhea, dysentery, tumors, hyperpiesia (hyperplasia), neuropathy and hepatopathy. This plant is reported to have immunostimulant, antihematotoxic and antioxidative activities\(^4\). Shatavari is the main Ayurvedic rejuvenative tonic for the female. It is also used for menopausal symptoms and to increase lactation. It is a sweet and bitter herb which is said to be particularly balancing to Pitta Dosha. Recent reports on Shatavari indicate that the root extracts have antioxidant and anti-diarrheal activities in laboratory animals\(^3\).

Tulsi (Ocimum sanctum) a small herb seen throughout India, has been recommended for the treatment of bronchitis, bronchial asthma. Eugenol is the active constituent present in tulsi leaves\(^14\). It is an antioxidant. Malaria, diarrhoea, dysentery, skin diseases, arthritis, painful eye diseases, chronic fever, insect bite etc. It used in antifertility, anticancer, antidiabetic, antifungal, antimicrobial medicines and has hepatoprotective, cardio protective, antiemetic, adaptogenic and diaphoretic actions.

**Burfi** has been favored as one of the most popular khoa based sweets all over India. The unique adaptability of khoa in terms of its flavor, body and texture to blend with a wide range of food have permitted development of an impressive array of Burfi varieties\(^5\). The khoa Burfi prepared with fruits, nuts, chocolate, coconut, saffron, rawa, santra added Burfi are popular. Theses food adjustment makes products artfully used singly or in innovative combinations to delight a gourmet\(^2\). Variation in ingredient, their proportion and processing condition affects the quality of Burfi, and lack of knowledge in these aspects is a serious limitation for process standardization and quality control of Burfi. Today consumer awareness increases with the relationship between the diet and health. The knowledge of nutrition among general population has led to development of food, meeting specific nutrition requirement for better immunity and health. We can deliver specific health benefits in familiar manner by incorporation of beneficial ingredients into existing food products like Burfi. Khoa is used as carrier material for herbs. Herbal products are gradually gaining popularity in world market due to presence of rich natural antioxidants and functionally active ingredients. Use of botanicals in food is popular due to excellent therapeutic value and neutracueticlal properties.

Presently, herbal products either in the form of cosmetics or foods has become more popular in the world market. In fact people are now suffering from various diseases. Epidemiological data as well as in vitro studies strongly suggest that foods containing phytochemicals with anti-oxidation potential have strong protective effects against major disease risks including cancer and cardiovascular diseases\(^8\). After observing all this problems and remedies, entrepreneurs are now concentrating on the preparation of herbal sweets that are rich in natural antioxidants and functionally active nutrients. Herbal sweet preparation is a new concept in dairy industry. Combined dairy products (dairy product + herbs) therefore serve as a good source of antioxidant. Thus, it was planned to standardize a method comprising suitability of herbs in khoa based products Burfi.

**MATERIAL AND METHODS**

The control burfi was prepared as per the method suggested by Sachdeva and Rajorhia\(^14\) with slight modifications. While herbal burfi prepared by the following method as shown in Fig. 1.

**Sensory evaluation**

The fresh samples of burfi were subjected to organoleptic evaluation to panel of 7 judges by using 9 point hedonic scale. The samples were judged for sensory attributes like color, appearance, body and texture, flavor and overall acceptability. The scores ascertained
for each factor and expressed numerically on a scale of 1-9.

Statistical analysis
The data obtained after all the analysis of burfi samples were subjected to statistical analysis to determine the level of significance between quality parameters of different treatments by using “One Way ANOVA” & means compared according to appropriate methods described by Snedecor and Cochran. Treatment of herb given to burfi in following ways

Control = milk burfi + no herb
T1 = milk burfi +1 per cent herb on khoa basis
T2 = milk burfi +1.25 per cent herb on khoa basis
T3 = milk burfi +1.5 per cent herb on khoa basis
T4 = milk burfi + 2 per cent herb on khoa basis

Each treatment was replicated for three times.

RESULTS AND DISCUSSION
Preliminary trials were conducted to optimize the levels of herbs powder in Burfi. The sensory analysis of added herbs in Burfi was performed by a trained panel of seven judges from institute. The scoring of sample was done on the basis of a 9- point hedonic scale, described by Piggot. The sensory evaluation attributes color and appearance, body and texture, flavor and overall acceptability were gathered in accordance with the total scoring given by the panelists of each assortment of the new product. The sensory scores obtained for each treatment of Burfi added with herbs are presented in Table 1.

Color
Sensory score obtained as indicated in Table 1 for color of Burfi added with different level of herb T1, T2, T3 and T4 were 6.93±0.88, 6.93±0.79, 5.86±1.30 and 5.81±1.46 respectively. Sensory scores for color decreased in the order of T4 <T3< T2 =T1 with increased per cent of herb addition. Sample T4 herbal Burfi had lowest score because of dark color of herb. Tulsi leaves powder imparts its green colour to the products. Burfi sample T1, T2 herbs showed maximum acceptance for color. Statistical analysis by ANOVA showed that there were significant differences (P>5%) among the Burfi containing different levels of herbs and their corresponding control sample. Londhe et al., reported decrease in colour score during storage study of brown Peda at 30 ºC using different packaging materials.

Appearance
Sensory score obtained as indicated in Table 1 for appearance of Burfi added with different level of herb T1, T2, T3 and T4 were 6.80±0.86, 7.20±0.67, 5.93±1.38 and 6.00±1.13 respectively. Sensory scores for appearance decreased in the order of T2>T1> T4 >T3 percent of herb addition. Burfi sample T2 herbs showed maximum acceptance for appearance. Statistical analysis showed that there were significant differences (P>5%) among the Burfi containing different levels of herbs and their corresponding control sample. Londhe et al., reported decrease in appearance score during storage study of brown Peda at 30 ºC using different packaging materials.

Body and Texture
Sensory score for body and texture (Table 1) of Burfi added with different level of herb T1, T2, T3 and T4 were 6.80±1.2, 7.07±1.22, 6.47±1.06 and 6.73±0.12 respectively. Sensory scores for body and texture decreased in the order of T2>T1> T4 >T3 percent of herb addition. Burfi sample T2 showed maximum acceptance for body and texture. Statistical analysis by ANOVA showed that there were no significant differences (P>5%) among the Burfi containing different levels of herbs and their corresponding control sample. Londhe et al., reported decrease in body and texture score during storage study of brown Peda at 30 ºC using different packaging materials.

Flavor
Sensory scores for flavor of Burfi (Table 1) added with different level of herb T1, T2, T3 and T4 were 7.27±0.78, 7.27±0.90, 6.87±0.91 and 6.73±1.16 respectively. Flavor acceptance of Burfi samples decreased in the order T2=T1> T3 > T4 percent herb addition. Burfi
sample T2 showed maximum acceptance for flavor. T4 shows lower sensory score due to high after taste. Statistical analysis by ANOVA showed that there were non-significant differences (P>5%) among the Burfi containing different levels of herbs and their corresponding control sample. Sharma and Kulkarni\textsuperscript{16} also reported the decrease in mean flavour and body and texture scores of the control and MAP packaged Malai Peda samples in flexible packaging material at room temperature.

**Overall acceptability**

Sensory scores obtained as indicated in Table 1 for Overall acceptability of Burfi added with different level of herb T1, T2, T3 and T4 were 6.93±0.96,  7.07±1.22,  6.40±1.29 and 6.33±1.23 respectively. Overall acceptability of Burfi samples decreased in the order T2>T1> T3 > T4 percent herb addition. Burfi sample T2 showed maximum acceptance for overall acceptance. Statistical analysis showed that there were significant differences (P>5%) among the burfi containing different levels of herbs and their corresponding control sample. Burfi sample T2 (1.25 percent of herbs) exhibited maximum score for color (6.93), appearance (7.20), body and texture (7.07), Flavor (7.27) and Overall acceptance (7.07) (next to control Burfi) as evident from Table 5. The remaining levels viz., T1, T3 and T4 showed significantly lower sensory scores as compared to control and hence they were not accepted. Significant differences (P> 5%) were observed in color, appearance and overall acceptability and non-significant differences were observed in body and texture and flavor Burfi added with different levels of herb compared with the control. Hence, on the basis of these preliminary studies 1.25% herb added Burfi was selected for storage study and for determination of cost of production. Londhe et al.,\textsuperscript{9} also reported decrease in overall acceptability score during storage study of brown Peda at 30°C using different packaging materials.

![Flow diagram for manufacture of herbal Burfi](https://example.com/flow_diagram.png)

*Fig. 1: Flow diagram for manufacture of herbal Burfi*
<table>
<thead>
<tr>
<th>Treatment</th>
<th>Color</th>
<th>Appearance</th>
<th>Body &amp; Texture</th>
<th>Flavor</th>
<th>Overall acceptability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>8.13±0.74  a</td>
<td>8.13±0.63  a</td>
<td>7.53±0.99</td>
<td>7.60±0.98</td>
<td>7.67±0.81</td>
</tr>
<tr>
<td>T1</td>
<td>6.93±0.88  b</td>
<td>6.80±0.86  b</td>
<td>6.80±1.2</td>
<td>7.27±0.78</td>
<td>6.93±0.96</td>
</tr>
<tr>
<td>T2</td>
<td>6.93±0.79  b</td>
<td>7.20±0.67  b</td>
<td>7.07±1.22</td>
<td>7.27±0.90</td>
<td>7.07±1.22</td>
</tr>
<tr>
<td>T3</td>
<td>5.86±1.30  c</td>
<td>5.93±1.38  c</td>
<td>6.47±1.06</td>
<td>6.87±0.91</td>
<td>6.40±1.29</td>
</tr>
<tr>
<td>T4</td>
<td>5.81±1.46  c</td>
<td>6.00±1.13  c</td>
<td>6.73±0.12</td>
<td>6.73±1.16</td>
<td>6.33±1.23</td>
</tr>
</tbody>
</table>

**CONCLUSION**

The results of the present investigation have established the successful use of herb in traditional dairy product like Burfi. The present product was prepared on the basis of traditional therapeutics knowledge and the standardized process of product development. It introduced the concept of standard processing with some combination of the functional characteristics of herbal ingredients. Herbs (1.25%) can successfully been added into Burfi without any significant change in its sensory, physico-chemical and microbial attributes of the original product. Addition of herbs gives optimum shelf life to the Burfi without change in its properties.

**REFERENCES**

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