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AR Deshmukh

Department of Animal
Husbandry and Dairy Science,
Mahatma Phule Krishi
Vidyapeeth, Rahuri, Dist.
Ahmednagar, Maharashtra,
India

RJ Desale

Department of Animal
Husbandry and Dairy Science,
Mahatma Phule Krishi
Vidyapeeth, Rahuri, Dist.
Ahmednagar, Maharashtra,
India

SM Khupse

Department of Animal
Husbandry and Dairy Science,
Mahatma Phule Krishi
Vidyapeeth, Rahuri, Dist.
Ahmednagar, Maharashtra,
India

YB Kandalkar

Department of Animal
Husbandry and Dairy Science,
Mahatma Phule Krishi
Vidyapeeth, Rahuri, Dist.
Ahmednagar, Maharashtra,
India

Correspondence**AR Deshmukh**

Department of Animal
Husbandry and Dairy Science,
Mahatma Phule Krishi
Vidyapeeth, Rahuri, Dist.
Ahmednagar, Maharashtra,
India

Sensory evaluation of herbal ghee prepared with Ashwagandha (*Withania somnifera*) and Shatavari (*Asparagus racemosus*) extracts

AR Deshmukh, RJ Desale, SM Khupse and YB Kandalkar

Abstract

Herbal ghee was prepared by incorporating medicinal herbs. Ashwagandha and Shatavari are popular medicinal plant. Considering antioxidant properties of herbal/medicinal plants, the efforts were made through present investigation to assess the "Sensory Evaluation of Herbal Ghee". According to treatments, samples of herbal ghee were prepared and evaluated for sensory and physico-chemical quality. The present study was found that the levels of alcoholic extract prepared from Ashwagandha, Shatavari and combination thereof when added at the level of 0.5%, 0.5% and 0.20+0.20 % respectively of the fat taken, ghee prepared by following creamery butter method were the best in sensory attributes of ghee.

Keywords: Ghee alcoholic extract, ashwagandha, shatavari, sensory evaluation

Introduction

Ghee is a fat-rich dairy product, widely used in India from ancient time. It has been an integral part of our culture. It is mainly used as food and flavouring ingredient. But ghee contains cholesterol, which is one of the suspected culprits for heart disease and diabetes. Hence, health-conscious people are scared of taking ghee. To alleviate this fear, the present study was undertaken to develop a process for herbal ghee, i.e. Arjuna and Moringa ghee, with functionalities like resistance to heart diseases, property to regulate blood pressure, increase immunity of human health. Parmar *et al.*, (2013) [3] reported that ethanolic extract of Arjuna bark increased the shelf life of ghee as compare to control sample during storage at 80⁰ C. Their findings also suggested that freshly prepared ghee from cow milk added with Arjuna bark had good potentiality to act as free radical scavenger. The application of medicinal plants to maintain health and treat disease started.

Ashwagandha (*Withania somnifera*)

Withania somnifera, also known as Ashwagandha, Indian ginseng and winter cherry, has been an important herb in the Ayurvedic and indigenous medical systems for over 3000 years. Ashwagandha in Sanskrit means "horse's smell", probably originating from the odour of its root which resembles that of sweaty horse (Puri, 2003) [4]. The species name *somnifera* means "sleep-bearing" in Latin, indicating it was considered a sedative, but it has been also used for sexual vitality and as an adaptogen.

Shatawari (*Asparagus racemosus*)

Asparagus racemosus (family Liliaceae), is commonly called Shatavari, Satawar or Satmuli in Hindi; Satavari in Sanskrit. It is considered both a general tonic and a female reproductive tonic. The major active constituents are steroidal saponins.

Root of *Asparagus racemosus* has been referred as bittersweet, emollient, cooling, nervine tonic, constipating, galactagogue, aphrodisiac, diuretic, rejuvenating, carminative, stomachic, antiseptic (Chopra *et al.*, 1994) [1] and as tonic. Beneficial effects of root of *Asparagus* are suggested in nervous disorders, dyspepsia, diarrhoea, dysentery, tumors, inflammations, hyperdipsia, neuropathy, hepatopathy, cough, bronchitis, hyperacidity and certain infectious diseases (Sharma *et al.*, 2000) [6]. The fresh root juice mixed with honey is given to relieve dyspepsia.

Materials and Methods

Starter Culture

LF -40 culture maintained at laboratory of Department of Animal Husbandry and Dairy Science, MPKV, Rahuri, Dist. Ahmednagar. It was kept in refrigerator at 0-5°C until used (for sub culturing / inoculation maintenance of starter culture).

Cream

The fresh clean milk and cream was collected from Research Cum Development Project on Cattle, Department of Animal Husbandry and Dairy Science, M.P.K.V., Rahuri, Dist. Ahmednagar. The cream was collected immediately after morning milking.

Ashwagandha (*Withania somnifera*) and Shatavari (*Asparagus racemosus*)

Ashwagandha and Shatavari Extract as a source of natural herb were purchased from All India Coordinated Project on Medicinal and Aromatic Plants and Beetle Vine Research, MPKV, Rahuri, Dist. Ahmednagar.

Addition of Antioxidants

The ethanolic extract of *Ashwagandha (Withania somnifera)*

and *Shatavari (Asparagus racemosus)* added at the rate of 0.5 per cent into the freshly prepared ghee, while synthetic antioxidant such as BHA was added at the rate of 0.02 per cent into the ghee.

Sensory Evaluation

The sensory evaluation of herb extract ghee was carried out by the panel of six semi trained judges from the staff of Department of Animal Husbandry and Dairy Science and Department of Food Science and Technology, Post Graduate Institute, Mahatma Phule Krishi Vidyapeeth, Rahuri., by indicating their score on a 100-point scale as prescribed by Bureau of Indian Standards (IS: 7770-1975), (Appendix: I)

At the time of judging of fat enriched milk products, there are certain qualities are considered. These qualities include colour and appearance, flavour (smell + taste), body/ consistency/ texture, freedom from suspension, overall acceptability etc.

Overall Acceptability

The overall acceptability is the consensus on the overall quality of the product. The samples of the ghee prepared under this study were subjected to the judges to record the score on overall acceptability. The data pertaining to this attribute is presented in the Table-1.

Table 1: Overall acceptability score of herb extracts ghee prepared with cream and dahi

S. No	Treatments	Mean Score					
		Ashwagandha		Shatavari		Ashwagandha+ Shatavari	
		Cream	Dahi	Cream	Dahi	Cream	Dahi
1	T ₀	89.67	88.83	89.67	88.83	89.67	88.83
2	T ₁	89.83	89.49	89.66	89.49	89.67	89.33
3	T ₂	89.34	89.83	89.01	88.84	90.66	89.66
4	T ₃	90.50	88.17	89.17	88.67	91.16	90.16
5	T ₄	91.66	89.49	91.17	90.33	89.67	88.50
6	T ₅	89.33	87.00	90.17	89.16	88.16	87.49
7	T ₆	85.83	86.16	85.67	85.33	85.84	85.17
8	Total	89.45	88.43	89.22	88.67	89.26	88.45

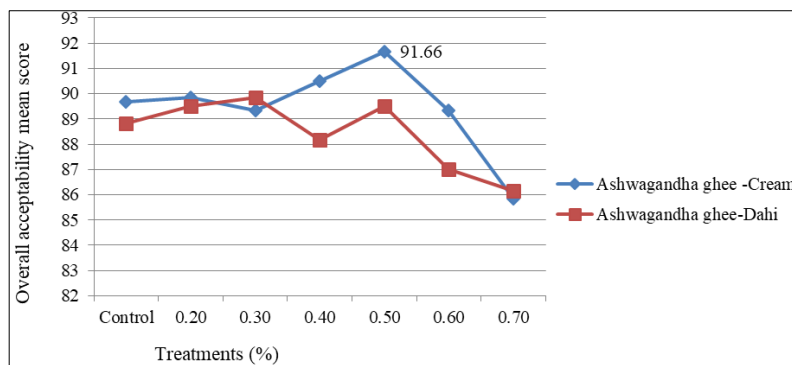


Fig 1: Overall acceptability score of *Ashwagandha* ghee prepared with cream and dahi

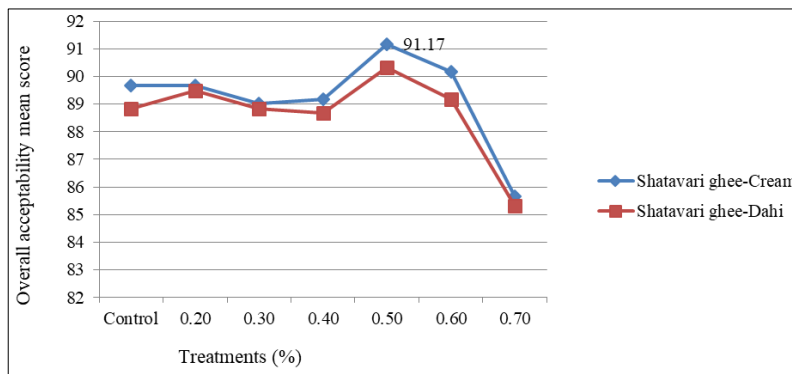


Fig 2: Overall acceptability score of *Shatavari* ghee prepared with cream and dah

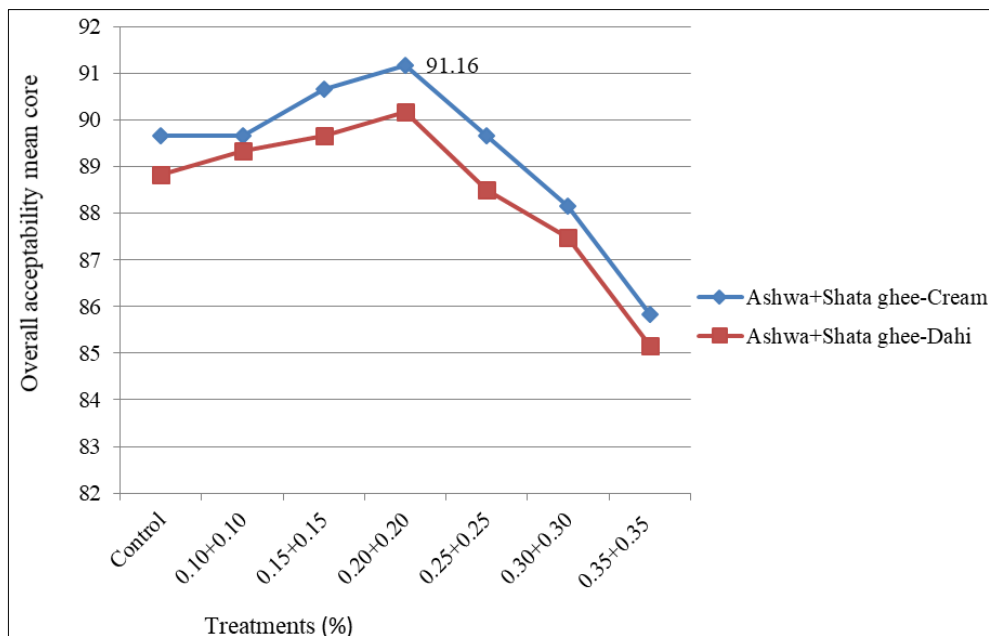


Fig 3: Overall acceptability score of *Ashwagandha* + *Shatavari* ghee prepared with cream and dahi

From the values of Table- 1 and Figure-1,2 &3 it revealed that the ghee prepared from cream and dahi did not show any significant effect on overall acceptability. The ghee sample of treatment T₄ scored at maximum 91.66 (cream), T₂ 89.83 (dahi) for *Ashwagandha* (*Withania somnifera*). Treatment T₄ scored at maximum 91.17 (cream), 90.33 (dahi) for *Shatavari* (*Asparagus racemosus*) ghee. T₃ scored at maximum for *Ashwagandha* + *Shatavari* (combination) i.e. 91.16 and 90.16 ghee prepared from cream and dahi, respectively. The effect of cream and dahi, influenced non significantly on the score of overall acceptability of the ghee samples. The sensory score of ghee prepared from cream was higher than ghee prepared from dahi. After computation of recorded score in the Table -1 the prepared ghee product has Excellent (A grade) quality.

The results of optimization of level of *Ashwagandha*, *Shatavari* and combination thereof extract added while preparation of ghee by using both cream and dahi as raw material, evaluated sensorily. Sensory scores are presented in Table 1. Six levels (0.20, 0.30, 0.40, 0.50, 0.60 and 0.70%) of *Ashwagandha*, *Shatavari* and combination thereof (0.10+0.10, 0.15+0.15, 0.20+0.20, 0.25+0.25, 0.30+0.30 and 0.35+0.35 %) extract were tried.

The result both typed manufactured ghee (cream and dahi) showed that 0.50 per cent levels of *Ashwagandha*, *Shatavari* and 0.40 (cream and dahi) combination thereof extract added ghee had more acceptances over rest of the other levels tried in terms of all sensory characters of ghee. Therefore, 0.50 per cent treatment T₄ level of *Ashwagandha* and *Shatavari* extract was considered for further studies. In addition to this combination thereof *Ashwagandha* and *Shatavari* 0.20+0.20 percent treatment T₃ ghee prepared from cream was finalized for final experiment.

These results were in agreement with Rajnikant (2005) [5] who reported that with level of *Arjuna* herb in cow ghee, different combinations in respect of herbal extract for preparation of ghee were tried by different workers these included ragi powder (DRP) at the rate of 0.1%, 0.25% and 0.5% Mehta (2006) [2], *Arjuna* extract by Pankaj Parmar (2013) [3], respectively.

Conclusion

The level of addition of extracts was optimized that produced herbal ghee with superior sensorial attributes, were selected and that used in the second phases for physicochemical and oxidative evaluations.

While selecting the levels of extract it was found that alcoholic extract prepared from *Ashwagandha*, *Shatavari* and combination thereof when added at the level of 0.5%, 0.5% and 0.20+0.20 % respectively of the fat taken, ghee prepared by following creamery butter method were the best in sensory attributes of ghee.

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