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STUDIES ON SENSORY CHARACTERISTICS IN WHEY BEVERAGE BY UTILIZATION OF TULSI LEAVES JUICE

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Abstract

Whey is one of the foremost by-merchandise of the dairy enterprise formulated utilising unprocessed wheywith amazing dietary features and flavors; together with mixing of tulsi juice and few easy components likesugar, colour, flavour, it converts into the first-class beverage. Sweet whey is synthetic throughout the making of rennet varieties of tough cheese like Cheddar or Swiss cheese. Acid whey is a derivative produced throughout the making of acid sort of dairy merchandise which include cottage cheese or strained yogurt. The improvement of fitness selling meals is one of the set goals in meals method engineering. Research overthe last many years has proven that the mixture of habitual meals with medicinal herbs having any uniquefitness useful impact may be an amazing supply for improvement of practical meals. The importance of conventional knowledge, their mixture with medical knowledge and the call for from clients for range andfitness awareness have triggered to search for version in merchandise which include natural drinks.

Keywords: Paneer whey, Osmium sanctum (OS) –Tulsi, citric acid, beverage, organoleptic characteristics, Milk

INTRODUCTION

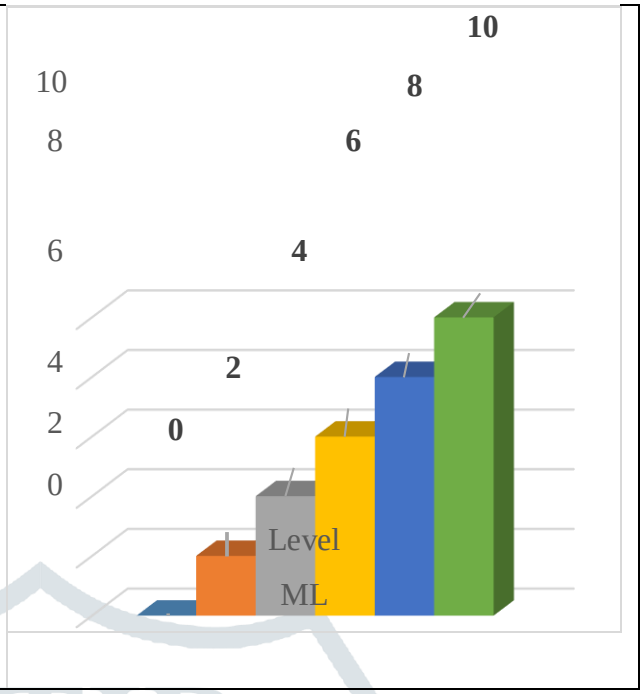
Whey is one of the major by-products of the dairy industry. It increases nutritive valueby the addition of some simple ingredients like sugar, colour, flavour, it converts into the bestbeverage. Sweet whey is manufactured during the making of rennet types of hard cheese like Cheddar or Swiss cheese. Acid whey is a by-product produced during the making of acid typeof dairy products such as cottage cheese or strained yogurt.Tulsi has been used in India for around 50000 years, due to its large number of medicinal properties. It has specific aromatic odour because of the presence of essential or volatile oil, mainly concentrated in the leaf. This aromatic oil mainly contains phenols, terpenesand aldehydes. Holy Basil (Tulsi) is so good for boosting up the immune system that cannot beexplained in words. It protects from nearly all sorts of infections from viruses, bacteria, fungi and protozoa. Recent studies show that it is also helpful in inhibiting growth of HIV and carcinogenic cells. Even healthy persons can chew 12 leaves of basil twice a day to prevent ulcers and mouth

cancer.

Materials and Method:

This study was conducted in the Department of Dairy Science, Maharashtra Udayagiri Mahavidyalaya,Udgir. The present investigation was carried out for the preparation of whey beverage by utilization of Tulsi leaves juice. Hence details the materials used and the method adopted for the present investigation are presented in this chapter. Ingredients used in preparation of whey beverage by utilization of Tulsi leaves juice considering the initial investigation the effect of five different levels of tulsi juice extract were studied on the sensoryquality of this product. The levels of these variables that resulted in most of the liked product on the basis of sensory evaluation were selected. Milk Good quality milk such as whole clean fresh and standardized milk was purchased from the local market. Citric Acid good quality andlabelling citric acid was purchased from the local market. Sugar Good quality of food grade cane sugar was purchased from the local market Tulsi leaves Tulsi leaves were collected fromthe surrounding houses of Udgir as well as Latur region in Maharashtra Extraction of Tulsi leavesjuice Procedure The freshly Tulsi leaves were collected (500g) and washed with salt thoroughly in running tap water. The leaves again washed with mineral water for removal of unwanted dirt particles, microorganisms. After that sieved leaves, add to the mixer and grind until juicy consistency occurs. Thesterile muslin cloth is used to extract the tulsi juice. A clean and sterile glass bottle is taken and filled with tulsi juice with capping aluminium foil, kept in the refrigerator. Tulsi juice and whey blended beverages. This phase involved the whole idea of development of whey blended beverages with Tulsi juice. The different blending ratio of Tulsi whey beverage are 100ml whey (T0) , 98ml whey + 2ml Tulsi juice(T1), 96ml whey+ 4ml Tulsi juice (T2), 94ml whey+ 6ml Tulsi juice(T3) 92ml Whey +8mlTulsi juice (T4)and 90ml whey +10ml Tulsi Juice(T5). Best blended RTS was selected by an organoleptic test which was conducted on a 9 point hedonic scale for appearance, colour, taste, flavourand overall acceptability by a panel of 6 semi-trained judges having prior experience of sensory analysis.. Procedure Mixed the Tulsi juice and whey added sugar, Tulsi whey beverage pasteurized in a water bath at 60 ° C for 5 minutes. After that cool the pasteurized beverage at room temperature and take the bottle of 200ml capacity filled with pasteurized beverage. Then done storage at Refrigeration.Process combination for the present investigation following parameters were used to standardize the product. Following parameters were used for the both milk i.e. cow and buffalo milk.

Sr. No.	Process of combination	level of Tulsi juice (ml)
1.	To	0ml
2.	T1	2ml
3.	T2	4ml
4.	T3	6ml
5.	T4	8ml
6.	T5	10ml



Method of preparationFlow diagram

Whey beverage was prepared as per method described by S.N. Landge and S.M. Gaikwad (2015) with slight modification. The diagram of preparation of Whey beverage by utilization of Tulsi leaves juice is depicted.

Receiving of milk (Boiling at 101℃)

↓

Addition of citric acid at 70℃ milk (2%)

↓ Channa

↓

Straining with muslin cloth

↓ Collection of whey

↓

Addition of sugar (8%)

↓

Addition of Tulsi leaves juice

↓ Addition of flavour

↓ Mixing well

↓ Packaging

↓

Storage (5℃)

Details of Manufacture:

Fresh milk was procured from the local market of Udgir with 3.5% fat and 8.5% Solidnot fat (SNF) whey beverage was prepared by supplementing different levels of Tulsi leaves juice viz. 2,3,4,6,8 and 10ml to the whey beverage. Whey beverage prepared without Tulsi leaves served as control and was compared with the treatments. The sensory evaluation of theproduct was carried for attributes, namely appearance, sweetness and the overall acceptabilityof fresh whey beverage. The scores for qualitative data such as colour and appearance, flavor,sweetness, and the overall acceptability given by different judges were tabulated Sensory Sheetwith the help of 9 point hedonic scale.

Sensory Evaluation:

Sensory evaluation of fresh samples was done by a panel of six semi trained members,based on a 9- point hedonic scale, wherein 9 denoted extremely desirable and 1 denoted extremely undesirable. Water was provided for oral rinsing between the samples. Utensils Forpresent study stainless and aluminium utensils were used such as aluminium open pan (karahi),stainless steel plates khunti, tray, spoons and glass like beaker, measuring cylinder, glass rod etc.

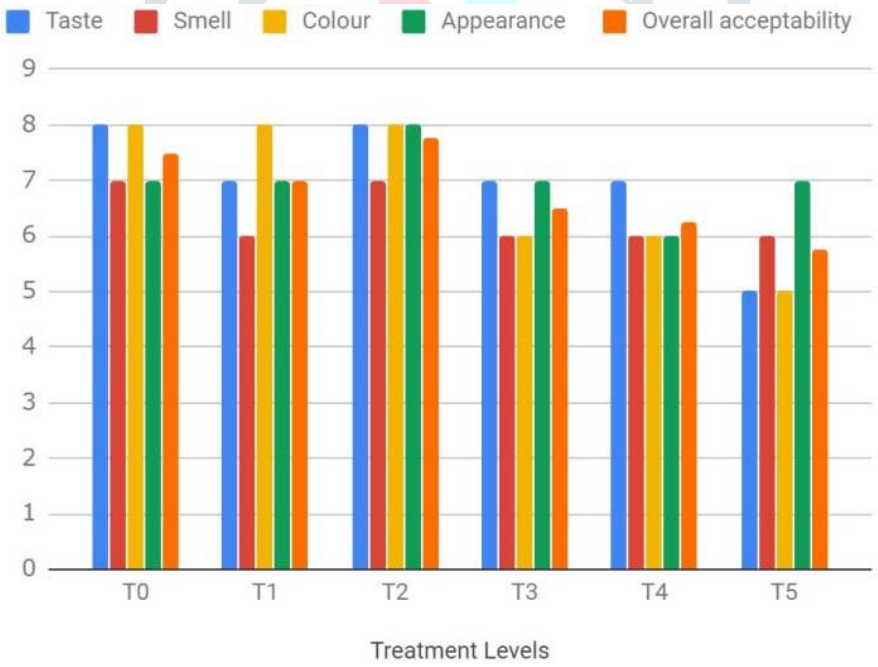
Result and Discussion:

Table 4.1 Effect of level of Tulsi whey beverage on the sensory quality levels.

Attributes					
Treatment	Taste	Smell	Color	Appearance	Overall acceptability
T0	8	7	8	7	7.5
T1	7	6	8	7	7
T2	8	7	8	8	7.75
T3	7	6	6	7	6.5
T4	7	6	6	6	6.25
T5	5	6	5	7	5.75

4.1 Effect of level of Tulsi leaves juice on the sensory quality of Tulsi whey beverage. The mean sensory score given by the panel lists to the Tulsi leaves juice beverage samplepreparated at different treatments given in table 4.1 the maximum mean sensory score wasobtained by the product sample of treatment T0 and T2 combination for the smell, taste, colour,appearance, and overall acceptability out of all these combination for the taste sample T2 gothighest score as compare to the other combination however sample T5 got lowest score iscompare to other combination. From present investigation it is reported that for overall acceptability is level of Tulsi leaves juice increased then acceptability decreased and when theincrease in Tulsi juice whey beverage the smell score increased taste score is reduced. Thepresent investigation corroborates S.N. Landge and S.M. Gaikwad (2013) reported thatpreparation and sensory evaluation of whey beverage. In this investigation, they reported thatutilization of whey for the conversion into the best beverage would be one of the importantways to utilize it. They reported their result of sensory quality is good. Based on the aboveresults, it may be concluded that the whey can very well be utilized for preparation ofacceptable whey beverage. The whey beverage prepared from *channa* or *paneer* whey (14%sugar+pinch of jeera) was most acceptable. R.K. Upadhyay (2017) studied the present reviewarticle explains Tulsi: A holy plant with high medicinal and therapeutic value. In thisinvestigation they reported that Tulsi (0cimum sanctum) is an aromatic plant belonging to thefamily Lamiaceae. It is traditionally used for preparation of various Ayurvedic formulations

for treatment of bronchitis, influenza, and asthma. Hot concoction of Tulsi leaves is usually provided for immediate relief of cold, sneezing nose, cough, malaria and dengue. This article explains the biological effectiveness of OS against diabetes mellitus, hypertension, cancers, respiratory diseases, arthritis, various microbes, and parasites. Tulsi extracts and its various bio- organic constituents showed antioxidant activity, anti-atherogenic effect, anti-aging, immune modulatory, anti-inflammatory, anti-stress, hepatoprotective, radioprotective, anthelminthic, repellent and larvicidal activity. Tulsi active ingredients showed anti-inflammatory properties and also played a role in modulation of both cellular and humoral immunity. Plant shows healing properties in hepatic injury and gastric ulcer. It relieves stress,restores and improves body immunity and digestion. Ocimum basilicum L. contains (-)- linalool, eugenol and methyl chavicol, methyl chavicol (93.0%), gamma-caryophyllene as major constituents. Minor oil constituents are (+) - delta-cadinene, 3-carene, alpha-humulene,citral and (-)-trans-caryophyllene. Tulsi contains high alpha-linolenic acid contents camphor, caryophyllene oxide, oil cineole, methyleugenol, limonene, myrcene, and thymol, which are known insect repellents. Its essential oil (EO) can be used to abate the growth of mosquitoes and control malaria. It is a good repellent and can be used for deterring flies, mosquitoes and insects. No doubt tulsi plant is a good source of natural products mainly phyto-constituents andEO which can be used as alternative medicine for the treatment of various ailments and humanhealth problems but proper composition and appropriate formulation is required before being used.



4.1 Effect of level of Tulsi leaves juice on the sensory quality of whey beverages.

Fig. Sensory attributes

The maximum mean sensory score was obtained by the beverage sample of treatment T0 and T2 combination for the taste. One of the all these combinations for the taste sample T2got thehighest (8) score compared to the other sample however sample T5 got (5) score which is lowest as compared to the other combination of samples. As like this smell of the beverage maximum mean sensory score was obtained by the beverage sample of treatment T0 and T2 combination for the smell one of all these combination for the smell sample T2 got high (7) score is compare to the other sample however T5 got (6)score which is lowest as compare othercombination. Whenever Tulsi increased the smell of beverage. In colour the maximum mean sensory score was obtained by also T2 sample which is (8)score however T5 shows deep colourbecause increased Tulsi leaves juice and T5(5) score sample shows deep colour but bitter in taste. In which the all of the sample the appearance shows T2 high (8) score however but T5 shows lowest (7) score in this investigation T5 shows good colour but bitter in taste and overallacceptability of this sample the maximum mean sensory score was obtained by T2 got highest(7.75) score however T5 got lowest (5.75) score in which in all these parameter like taste, colour, smell, and appearance T2 got highest (7.75) score that's why overall acceptability of sample T2 is the good.

CONCLUSION:

It can be concluded that the whey beverage could be prepared using the Tulsi leaves juice. Theproportion of Tulsi juice may be taken as 4ml and 96ml of channa whey for the preparation ofwhey beverage by utilization of Tulsi leaves juice which was superior for its organoleptic quality. It is also recommended that Tulsi leaves juice can be effectively used for the productionof this newly invented beverage. Due to covid-19(corona) lockdown I am unable to conduct Microbiological tests of this product.

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