Evaluation of physico-chemical analysis of probiotic herbal yoghurt

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Abstract
Yoghurt becomes a functional food upon incorporating probiotics live micro-organism which we administered confer health benefits. Probiotics are fermentable fiber’s that nourish beneficial microflora enhances the functionality of probiotics. The research was conducted to determine the effect of different concentration of Ginger & Garlic extract on physico chemical analysis of yoghurt was prepared by standardised milk having 4.5% & 12 SNF with herbs & Ginger 1.0-1.5 & Garlic 0.2-0.4% respectively. The research analysis was carried out of each sample to its different parameters such as (Moisture, fat, protein, total solids acidity and sensory evaluation) of the prepared yoghurt was carried out.

Keywords: Garlic, ginger, yoghurt, physiochemical analysis, Sithermophilus, Rhomnosus

Introduction
Probiotic yoghurt is considered worldwide for its nutritional and health benefits are well known for centuries. The probiotics is described as a substance secreted by one organism that stimulates the growth of another, (Lilly & Stillwell, 1965) [4]. Probiotic have been found to be effective in the treatment of some gastrointestinal diseases as an anatonmy for antibiotics has emerged, for the term probiotic have been proposed by Fuller (1991) [3]. Many reports studied ginger used to fortify dairy products. (Okwute LO, Olafiaji B; 2013) [8] Revealed that incorporating ginger into Ogi (Nigerian traditional fermented food) significantly reduced its microbial load during fermentation which helps to improve its nutritional quality and the prevention of food borne diseases. Ginger is available in May form, but here, we have focused on the use of its fresh juice that is very potent as it contains high levels of active enzyme and substance. It is noteworthy that ginger juice contains gingerols (Nakamura et al. 1982) [7], which were reported as bacterial substances (Mahady et al. 2003) [5] and thus may be have adverse effects on the fermentative properties when adding it into yoghurt. One of the most widely researched medicinal plants and spice that has been used as both medicine and food in many civilizations for more than 400 years is garlic (Allium sativum). The Codex Ebers, dating to about 1550 B. C is an Egyptian medical papyrus that gives more than 800 therapeutic formulas, of which 22 of them mention garlic as an effective remedy for a variety of disorders including headache, heart problems, tumors, bites and worms (Milner 1996) [6].

Material and Method
Fresh buffalo milk was used for preparation of yoghurt. Milk composition was adjusted to achieve the desired fat and solid non-fat content (4.5% fat and 12% SNF) SMP was added to increase the amount of whey protein to desirable texture. Different concentration of Garlic (0.2-0.4%) and Ginger (1%-1.5%) added in standardized milk. The milk was pasteurized at 185° F (85 °C) for 30 minutes. The milk was cooled to 108°F (42 °C) favourable temperature for the growth of started culture. The started cultures (St. Thermophilus. L. Rhomnosus) were inoculated. Ginger rhizome & Garlic extracts is different concentration of 1-1.5%, 0.2-0.4% were added & rotate the milk were held at 108(42 °C) until PH 4.5 is reached. Then allow the fermentation to settle in gel form & produce yoghurt flavour, it takes 6-7 hrs. After setting yoghurt is placed in store at 6 °C.

The physiochemical analysis was carried 3 days interval during storage.
1. Fat: Fat was determined using Gerber method
2. Total Solids: The determination of the total solids of the sample was done gravimetrically as per procedure for milk laid down in IS-1475 part 1
3. **Moisture:** The moisture percentage of herbal yoghurt was determined as per AOAC (1990) [2]

4. **Ash:** The total Ash was determined according to AOC (1975)

5. **Lactose:** The Lactose content of formulated processed cheese spread was determined by Lane Eynon method as per IS: SP:18, Part X11(1981)

6. **Protein:** The protein content of herbal yoghurt is determined by Kjedahl method described in AOAC (1990) [2]

**Results and Discussion**

**Physiochemical Analysis**

**Moisture**

It is evident from the fig. 1 that the highest average value of moisture content was obtained in the treatment T16 Ga=0.4% garlic extract + St. thrmophillus + L. rhamnosus 1:2@ 2% (83.89) whereas lowest value of moisture content was obtained in the treatment T6 Gg=1.5% ginger extract + St. thrmophillus + L. rhamnosus 1:2@ 1.5% (82.76).

**Fig 1: Average Moisture (%) in Probiotic Herbal Yoghurt Fat**

It is evident from the fig. 2 that the highest average value of fat content was obtained in the treatment T8 Ga=0.4% garlic extract + St. thrmophillus + L. rhamnosus 1:2@ 1.5% (4.68%). Whereas lowest value of fat content was obtained in the treatment T10 Gg=1.5% ginger extract + St. thrmophillus + L. rhamnosus 1:1@ 2% (4.31).

**Fig 2: Average Fat (%) in probiotic herbal yoghurt Protein**

It is evident from the fig. 3 that the highest average value of protein content was obtained in the treatment T16 Ga=0.4% garlic extract + St. thrmophillus + L. rhamnosus 1:2@ 2% (4.85). Whereas lowest value of protein content was obtained in the treatment T14 Gg=1.5% ginger extract + St. thrmophillus + L. rhamnosus 1:2@ 2% (4.55).

**Fig 3: Average Protein (%) in probiotic herbal yoghurt Ash**

It is evident from the fig. 4 that the highest average value of ash content was obtained in the treatment T15 Ga=0.2% garlic extract + St. thrmophillus + L. rhamnosus 1:2@ 2% and T16Ga=0.4% garlic extract + St. thrmophillus + L. rhamnosus 1:2@ 2% (6.40). Whereas lowest value of ash content was obtained in the treatment T9 Gg=1% ginger extract + St. thrmophillus + L. rhamnosus 1:1@ 2% (6.14).

**Fig 4: Average Ash (%) in probiotic herbal yoghurt Lactose**

It is evident from the fig. 5 that the highest average value of lactose content was obtained in the treatment T15 Ga=0.2% garlic extract + St. thrmophillus + L. rhamnosus 1:2@ 2% and T16Ga=0.4% garlic extract + St. thrmophillus + L. rhamnosus 1:2@ 2% (6.40). Whereas lowest value of lactose content was obtained in the treatment T15 Ga=0.2% garlic extract + St. thrmophillus + L. rhamnosus 1:2@ 2% (6.55).

**Fig 5: Average Lactose (%) in probiotic herbal yoghurt Total Solids**
It is evident from the fig. 6 that the highest average value of TS content was obtained in the treatment T15 Ga=0.2% garlic extract + St. thermophilus + L. rhamnosus 1:2@ 2% and T8 Ga=0.4% garlic extract + St. thermophilus + L. rhamnosus 1:2@ 1.5% (17.48). Whereas lowest value of TS content was obtained in the treatment T14 Gg=1.5% ginger extract + St. thermophilus + L. rhamnosus 1:2@ 2% (16.22).

![Fig 6: Average TS in probiotic herbal yoghurt](image)

**Conclusion**

It can be concluded from our research that by incorporation of ginger1& 1.5 percentage and garlic 0.22 & 0.4% resulted garlic significantly increased percentage of moisture & fat T16 & T8 as comparison with other treatments. The highest protein of probiotic yoghurt in seen in T8 and T16. The data on comparison between of lactose content shown significantly increased in T16 and T5 as compared with other treatments. It can be c deduce from research obtained that the addition of two herbs garlic and ginger level improve the taste and flavour, colour and appearance, body texture and wide acceptability of probiotic herbal yoghurt.

**Reference**