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CONTENTS

Standardisation and quality evaluation of coconut milk yoghurt

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ABSTRACT: Coconut is a versatile and widely cultivated crop in tropical regions like Kerala and plays a vital role in the agrarian economy and local diets. Coconut milk, extracted from mature coconut kernels, is rich in healthy fats and micronutrients, making it an ideal base for plant-based food innovations. With the rising demand for dairy-free alternatives, coconut milk has gained prominence in developing lactose-free fermented products. Yoghurt prepared from coconut milk offers a nutritious, vegan-friendly option. This study aimed to standardize coconut milk-based yoghurt and evaluate its quality as a potential dairy alternative. Coconut milk was extracted, pasteurized, and blended with homogenized cow milk in varying proportions (T_0-T_{10}). The formulation with 60% coconut milk (T_6) received the highest sensory evaluation score (8.36) based on a nine-point hedonic scale. Physicochemical analysis of T_6 showed moisture (72.80%), acidity (0.38%), pH (4.71), water holding capacity (48.21%), syneresis (2%), viscosity (3800cP), curd tension (38.50), peroxide value (0.80 milleq. /kg), TSS (15.5 ° (Bx)), total sugars (8.5%), reducing sugars (3.9%), carbohydrate (4.50g/100g), protein (2.28g/100g), fat (12.10%) and energy (142.90Kcal) which revealed favorable nutritional and functional properties, indicating significant potential for commercial-scale production of coconut milk yoghurt.

Keywords: Coconut milk, organoleptic, physico-chemical properties, quality evaluation, standardisation, yoghurt

Coconut palm (*Cocos nucifera* L.), the "Tree of Life" is a resourceful plant that is widely distributed in most of the tropical regions including India. The products of the coconut palm tree have traditionally been utilized in healthcare systems as restorative agents and have been extensively studied over the last few decades to reveal their significant medicinal and nutritive value (Neelakantan *et al*., 2020). The coconut tree holds significant importance in tropical regions as it serves as a source of food, livelihood, and economic opportunities for millions of people. Due to its naturally rich content of macro and micronutrients beneficial for human health and nutrition, the fruit is often referred to as a 'wonder fruit' (Kaur *et al*., 2019).

Sanful (2009) reported that coconut milk is an emulsion containing mainly lipids, carbohydrates and proteins which is rich in minerals and vitamins, while total saturated fat was 10 per cent of the total energy. It also contains several minor compounds including phenolic substances. Alyaqoubi *et al*. (2015) further highlighted its superior antioxidant properties than cow's milk and its nutritional content includes fat, ash, water, carbohydrate, protein and their derivatives. Lappano *et al*. (2017) identified that lauric acid, a major saturated fatty acid found in coconut milk, inhibits cancer cell growth by stimulating certain receptor proteins that regulate the growth of cells, while Lakshmi *et al*. (2017) emphasised its antibacterial properties against pathogenic bacteria. According to Batovska *et al*. (2009), the antibacterial effect is magnified when the lauric acid is utilised by human body and converted into its derivative monolaurin which possesses more potent antibacterial properties. Moreover, coconut milk has been recognized for its potential in managing obesity, insulin resistance, type 2 diabetes, hypertension, and Alzheimer's disease (Fernando *et al*., 2015).

Coconut milk's rich and creamy texture adds a luxurious touch to dishes without the need for dairy products, making it a popular choice in various culinary applications. Coconut milk is being used by confectionaries, bakeries, biscuits and ice cream industries worldwide to enhance flavour and taste of various products (Sanful, 2009).

Yoghurt, a globally consumed fermented dairy product, is traditionally produced by inoculating milk with starter cultures such as *Lactobacillus delbrueckii* subsp. *bulgaricus* and *Streptococcus thermophilus* (Aktar, 2022). Yoghurt is one of the most popular fermented milk products consumed worldwide not only for its perfect sensory properties but also for its high nutritive as well as its therapeutic values. It is offered in a variety of types of fat and total solid contents, the form of the body, with or without additives, probiotic microflora and in different flavours (Routray and Mishra, 2011). Yoghurt is easily digested, has high nutritional value and is a rich source of carbohydrates, protein, fat, vitamins, calcium and phosphorus (Sanchez *et al*., 2000). Kamruzzaman *et al*. (2002) stated that it is also very effective in curing diarrhoea, dysentery, constipation, lowering blood cholesterol and carcinogenesis.

Imele and Atemnkeng (2001) formulated yoghurt from coconut milk and found it to be both tasty and nutritious. Priya (2016) observed that coconut yoghurt could be helpful in meeting a significant portion of the daily needs of the nutrients for lactose intolerants and suggested that it can be recommended as a promising substitute for normal yoghurt.

MATERIALS AND METHODS

Collection of raw materials

Matured coconuts of the West Coast Tall variety were procured from the Instructional Farm of Kerala Agricultural University, Vellanikkara, Thrissur for the preparation of coconut milk yoghurt. Homogenized cow's milk, used for yoghurt preparation, was procured from the dairy plant of Kerala Veterinary and Animal Sciences University, Mannuthy, Thrissur. The yoghurt culture was obtained from the Department of Dairy Microbiology at the Verghese Kurien Institute of Dairy and Food Technology, Mannuthy. Additional ingredients, including pectin, skim milk powder, and sugar, were obtained from local sources.

Preparation of pasteurised coconut milk

Pasteurised coconut milk was prepared as per the standard procedure (Akoma *et al*., 2000) with slight modifications. Coconut milk was prepared by chopping the coconut endosperm, washing it thoroughly, and homogenizing with water in a 1:1 (w/v) ratio using a blender. The homogenate was filtered through three layers of cheesecloth to obtain the milk, which was then pasteurised at 72°C for 15 seconds and rapidly cooled to 45°C to ensure product safety and quality.

Standardisation of coconut milk yoghurt

Cow milk yoghurt was prepared following the standard method recommended by Sarabhai (2012). Coconut milk yoghurt was prepared by preheating cow milk to 60°C, followed by the addition of skimmed milk powder (3%), sugar (8%), and pectin (0.5%). The mixture was then pasteurised and blended with pasteurised coconut milk. After pasteurisation, the blend was cooled to 40-45°C and inoculated with 2% yoghurt culture at 42°C, followed by gentle mixing. The inoculated mixture was incubated at 42°C for 4-5 hours until curd formation. Subsequently, the yoghurt was cooled to 37°C and stored under refrigeration at 4°C. Coconut milk yoghurt was standardised by replacing cow milk in different proportions as shown in the Table 1

Organoleptic evaluation

Sensory evaluation of the prepared coconut milk yoghurts was conducted using a nine-point hedonic scale (Peryam and Pilgrim, 1957), with a panel of 20 judges assessing six sensory attributes: appearance, colour, flavour, texture, taste, and overall acceptability. Based on organoleptic qualities best treatment was selected for further studies along with control.

Table 1: Treatments for the Standardisation of coconut milk yoghurt

Treatments	Combinations
T_0 (control)	HCM (100%) (Milk yoghurt)
T_1	HCM (90 %) + CM (10 %)
T_2	HCM (80 %) + CM (20 %)
T_3	HCM (70 %) + CM (30 %)
T_4	HCM (60 %) + CM (40 %)
T_5	HCM (50 %) + CM (50 %)
T_6	HCM (40 %) + CM (60 %)
T_7	HCM (30 %) + CM (70 %)
T_8	HCM (20 %) + CM (80 %)
T_9	HCM (10 %) + CM (90 %)
T_{10}	CM (100 %)

HCM - Homogenised cow milk, CM - Coconut milk

Physicochemical properties of coconut milk yoghurt

The physicochemical properties like moisture, acidity, pH, water holding capacity, syneresis, viscosity, curd tension, peroxide value, TSS, total sugars, reducing sugars, carbohydrate, protein, fat and energy of best selected coconut milk yoghurt were determined along with control.

Moisture

Moisture content of yoghurt samples were estimated by the method of A.O.A.C. (2023). To estimate the moisture content, five grams of the sample were placed in a petri dish and dried in a hot air oven at 60-70°C. After drying, the sample was cooled in a desiccator and weighed. This process of heating, cooling, and weighing was repeated until a constant weight was obtained.

The moisture content was then determined based on the weight loss during drying.

$$\text{Moisture (\%)} = \frac{I - F}{I} \times 100$$

Where,

I - Initial weight of the sample ; F - Final weight of the sample

Acidity

Acidity of yoghurt samples was estimated by A.O.A.C. (2023). Yoghurt sample ten gram was mixed thoroughly with 30ml of lukewarm distilled water. It was titrated against 0.1N NaOH using phenolphthalein as indicator.

$$\text{Acidity (\%)} = \frac{\text{Titre value} \times \text{Normality} \times 90 \times 100}{\text{Weight of sample} \times 1000}$$

pH

Five gram samples of yoghurt were homogenized for 30 seconds in 100 ml of hot distilled water and vacuum filtered through Whatman filter paper. A 25ml aliquot was pipetted into a beaker and the pH was measured using a pH meter (AOAC, 2023).

Water holding capacity

The water holding capacity was determined according to the procedure suggested by Guzman-Gonzalez *et al*. (1999). A weighed amount of sample (20g), (Y) was centrifuged at 1250 rpm for 10 min at 4°C. The whey expelled (W) was removed and weighed again. The water holding capacity (WHC, g kg)

$$WHC = \frac{(Y - W) \times 100}{y}$$

Syneresis

Spontaneous syneresis of undisturbed set yoghurt was determined using siphon method designed by Lucey (2001) with slight modifications. The cup of curd was taken out from the refrigerator and weighed (W1). It was then kept at an angle of 45° for ten minutes to allow whey separation. Liquid whey from the surface of sample was siphoned out carefully using syringe. Siphoning was carried out within 10 seconds to avoid further leakage of whey from curd. The sample was weighed again after removal of whey (W2). Syneresis was calculated as the percentage of whey weight relative to the initial weight of the yoghurt sample.

$$\text{Syneresis \%} = \frac{(W1 - W2)}{W1} \times 100$$

Viscosity

A Brookfield viscometer, model BM type, was employed to assess the viscosity of the yoghurt. The recorded value represents the average of three measurements. All readings were taken at 10ºC, the typical consumption temperature of yoghurt. The spindle speed was adjusted according to the firmness of the sample. The specification combination used in this case was speed 12 (revolutions/ second) and spindle number 4. To calculate the final viscosity in centipoises, a factor of 500 was used to multiply the obtained figure.

Curd tension

The curd tension was measured by using stainless steel cone penetrometer and was expressed as mm/ 5sec. A higher the penetration value implicates lower hardness or curd tension of the product. The product temperature of 5±2°C was maintained prior to firmness measurement. A cone and test rod (probe) weighing 32g was allowed to penetrate the sample for a fixed time (5 seconds). The average of three readings was taken as millimetre of penetration.

Peroxide value

The peroxide value was determined using the iodometric titration method, as described by the A.O.A.C. (2023). The peroxides present in the sample react with potassium iodide to liberate iodine, which is then titrated with sodium thiosulfate using starch as an indicator. Five grams of yoghurt sample was taken into a conical flask, and 30 ml of a 3:2 mixture of glacial acetic acid and chloroform was added. Then, 0.5 ml of saturated potassium iodide (KI) solution was added, and the mixture was allowed to stand in the dark for 1 minute. Afterward, 30 ml of distilled water was added, and the liberated iodine was titrated with 0.01 N sodium thiosulfate solution until the yellow colour faded. A one ml starch indicator solution was then added, and the titration was continued until the blue colour disappeared, indicating the endpoint. A blank determination was carried out without the sample.

$$\text{Peroxide value(milleq./kg)} = \frac{(V\text{-}V0) \times N \times 1000}{\text{Weight of the sample (g)}}$$

Where,
V = Volume of sodium thiosulfate used for the sample (ml)
V_0 = Volume of sodium thiosulfate used for the blank (ml)
N = Normality of sodium thiosulfate solution

TSS

Total soluble solids were measured at room temperature using a hand-held refractometer (Erma, Japan) with a Brix range of 0 to 32°, and the results were expressed in degrees Brix, as described by Ranganna (1986).

Total sugar

The total sugar was determined using the method given by Ranganna (1986). A 50 ml portion of the clarified solution intended for reducing sugar analysis was taken, mixed with citric acid and water, and gently boiled. The solution was then neutralized with sodium hydroxide, and its volume was adjusted to 250 ml. A measured aliquot of this prepared solution was titrated with Fehling's solutions A and B. The total sugar content was expressed as a percentage.

$$\text{Total sugars(\%)} = \frac{\text{Fehling's factor} \times 250 \times \text{dilution} \times 100}{\text{Titre value} \times 50 \times \text{weight of the sample}}$$

Reducing sugar

Twenty-five grams of yoghurt were blended with 100 ml of distilled water and transferred to a conical flask. It was neutralized with 1N sodium hydroxide in the presence of phenolphthalein. For the clarification of the neutralized mixture, two ml of lead acetate was added, followed by the addition of two ml of potassium oxalate to neutralize the excess amount of lead acetate. The mixture was then left to stand for 10 minutes to allow the precipitate to settle. The solution was filtered through Whatman No.1 filter paper and made up to 250 ml. An aliquot of the solution was titrated against a boiling mixture of Fehling's solution A and B using methylene blue as an indicator until the appearance of a brick-red colour (Ranganna, 1986). The reducing sugars present in yoghurt were computed using the following formula as follows.

$$\text{Reducing sugar(\%)} = \frac{\text{Fehling's factor} \times \text{dilution} \times 100}{\text{Titre value} \times \text{weight of the sample}}$$

Carbohydrate

The total carbohydrate content was analysed colourimetrically using anthrone reagent (Sadasivam and Manickam, 1992). A yoghurt sample of 0.1 g was hydrolysed with five ml of 2.5 N HCl and then cooled to room temperature. The residue was neutralized with solid sodium carbonate until effervescence ceased, and the volume was made up to 100 ml and centrifuged. Then, 0.1 ml of the supernatant was pipetted and made up to one ml. Four mL of anthrone reagent were added to the mixture, which was then heated for eight minutes, rapidly cooled, and the intensity of the green to dark green color was measured at 630 nm. A graph was prepared using serial dilutions of standard glucose. From the standard graph, the amount of total carbohydrate present in the sample was estimated and expressed in grams.

Protein

Protein was estimated by the method of A.O.A.C. (2023). A 0.2 g sample was digested with six ml of concentrated H, SO„ after adding 0.4 g of $CuSO_4$ and 3.5 g K_2SO_4 in a digestion flask until the colour of the sample turned green. After digestion, it was diluted with water and 25 mL of 40% NaOH was added. The distillate was collected in 2% boric acid containing mixed indicators and then titrated with 0.2 N HCl to determine the nitrogen content. The nitrogen content thus estimated was multiplied by a factor of 6.25 to obtain the protein content.

Fat

The fat content was estimated by the Gerber method suggested by Agarwal and Sharma (1961). The sample was heated to about 38-40°C, mixed thoroughly, and cooled to 20°C. Five grams of the sample was used for estimation. 10 ml of Gerber sulphuric acid was transferred to a milk butyrometer, and the weighed sample was poured down the butyrometer. One ml of iso-amyl alcohol was added. The butyrometer was stoppered and shaken after placing it in a water bath at 65°C for five minutes. The sample was centrifuged in a Gerber centrifuge. The butyrometer was again immersed in a water bath, and the reading was taken from the graduated scale. The difference noted between the upper and lower levels indicated the percentage of fat in the sample.

Energy

Energy content of selected yoghurts was calculated according to Gopalan *et al*. (1989) and expressed as kilocalories (Kcal). The energy present in the sample was calculated using the following formula:

Energy (Kcal) = (CHO × 4)+(Protein × 4)+(Fat × 9)

Statistical analysis

The data was analysed using suitable statistical techniques. The best treatment was selected by applying Kendall's coefficient of concordance and nutritional parameters carried out paired sample t test.

RESULTS AND DISCUSSION

Organoleptic evaluation of coconut milk yoghurt

Organoleptic evaluation of coconut milk yoghurt was carried out using score card by a panel of twenty judges. The organoleptic scores are presented in Table 2.

The study on organoleptic evaluation of different treatments of coconut milk yoghurt found that treatment T_6, which used 60% coconut milk and 40% homogenised cow milk, received the highest scores in all parameters, such as appearance, colour, flavour, texture, taste, and overall acceptability. Treatment T_6 received the highest total mean score of 8.36, followed by T_1 (7.93) and T_5 (7.61). The judges also showed significant agreement in their evaluation of the different quality attributes of coconut milk yoghurt based on Kendall's value (w). Based on organoleptic evaluation the treatment T_6 (HCM (40 %) + CM (60 %) was selected for physicochemical evaluation.

Physicochemical properties of coconut milk yoghurt

Different physicochemical properties like moisture, acidity, pH, water holding capacity, syneresis, viscosity, curd tension, peroxide value, TSS, total sugars, reducing sugars, carbohydrate, protein, fat

Table 2: Mean scores of organoleptic evaluation of coconut milk yoghurt

Parameters	Appearance	Colour	Texture	Flavour	Taste	Overall acceptability	Total mean rank score
T_0	8.95(10.88)	9.00(10.13)	8.95(10.25)	8.88(10.53)	8.83(10.80)	8.63(10.90)	8.87
T_1	7.60(7.23)	8.15(7.45)	8.13(7.63)	8.26(9.05)	7.70(8.50)	7.73(8.95)	7.93
T_2	7.23(5.98)	8.01(7.00)	8.00(7.20)	7.55(5.63)	6.70(5.18)	7.15(6.90)	7.44
T_3	6.70(3.90)	8.00(6.75)	7.56(5.25)	7.36(4.55)	6.65(5.00)	6.75(5.35)	7.17
T_4	6.50(3.15)	7.63(5.63)	7.50(5.25)	7.25(4.08)	5.80(2.95)	6.20(2.98)	6.81
T_5	7.80(7.90)	7.61(5.63)	8.08(7.50)	8.02(8.00)	7.42(7.60)	6.75(5.33)	7.61
T_6	8.42(9.95)	8.50(8.65)	8.53(8.98)	8.46(9.30)	8.30(9.98)	7.99(9.68)	8.36
T_7	7.15(5.55)	7.40(4.53)	7.40(4.50)	7.23(4.35)	7.35(7.35)	6.80(5.35)	7.22
T_8	6.25(2.23)	7.10(3.60)	7.08(3.20)	6.58(2.05)	6.03(3.05)	6.12(2.78)	6.53
T_9	5.75(1.33)	6.70(2.10)	7.03(3.08)	6.30(1.53)	5.80(2.10)	5.60(1.50)	6.19
T_{10}	7.78(7.93)	7.51(4.55)	7.08(3.18)	7.78(6.95)	6.25(3.50)	6.97(6.30)	7.23
W	0.903**	0.543**	0.597**	0.849**	0.842**	0.826**	

Figures in parenthesis indicate mean rank scores, ** significant at 1 % level and energy of coconut milk yoghurt are presented in Table 3.

The moisture content of coconut milk yoghurt (T_6) was observed to be 72.8%, whereas the control sample recorded a higher value of 80.3%. This finding aligns with the results reported by Akoma *et al*. (2000), who observed that coconut-flavoured yoghurt exhibited lower moisture content due to the higher total solids present in coconut milk compared to cow's milk.

The acidity of coconut milk yoghurt (T_6) was recorded as 0.38%, which was lower than that of the control (0.67%). According to Belewu and Belewu (2007), reduced lactose content in coconut milk results in lower lactic acid production during fermentation, thereby influencing the overall acidity of the product.

Ezeonu *et al*. (2016) observed that coconut based yoghurts exhibited comparatively higher pH values than those made from cow's milk, supporting the notion that plant based milk matrices generally result in lower acidification during fermentation. This finding is consistent with the higher pH recorded for the selected coconut milk yoghurt (T_6) (4.71) compared to the control (4.62).

The water holding capacity of the selected coconut milk yoghurt (T_6) was lower (48.21) than that of the control (53.82), which aligns with the observed reductions in protein content and curd tension.

Table 3: Physicochemical properties of coconut milk yoghurt

Parameters	Control	T_6	T value
Moisture (%)	80.3	72.80	4.63*
Acidity (%)	0.67	0.38	1.71*
pH	4.62	4.71	0.17^{NS}
WHC (%)	53.82	48.21	6.26*
Syneresis (%)	1.5	2.0	1.41^{NS}
Viscosity (cP)	12500	3800	7.71*
Curd tension (g)	57.62	38.50	5.60*
PV (milleq. /kg)	0.15	0.80	4.89*
TSS °(Bx)	14	15.5	1.50^{NS}
Total sugars (%)	9.2	8.5	0.89^{NS}
Reducing sugars (%)	4.7	3.9	1.33^{NS}
Carbohydrate (g/100g)	5.57	4.50	1.15*
Protein (g/100g)	3.60	2.28	1.00^{NS}
Fat (g/100g)	3.29	12.10	2.90*
Energy (Kcal)	79.2	142.90	12.10*

*Significant at 5% per cent level, NS - non significant, WHC-Water holding capacity, PV-Peroxide value (T_6 - 60 % coconut milk + 40% homogenised cow milk)

Although some studies report higher WHC in coconut based yoghurts, such outcomes are highly dependent on formulation, stabilizer use, and processing conditions (Grasso *et al*., 2020).

Syneresis in the coconut milk yoghurt (T_6) was 2.0%, slightly higher than the control (1.5%), likely due to the weaker gel network of coconut proteins, which are less efficient at retaining water than casein. Yin *et al*. (2024) reported that plant based yoghurts often show higher syneresis due to lower protein content and reduced gel stability. The viscosity of T_6 (3800 cP) was significantly lower than the control (12500 cP), which may be attributed to the absence of casein and the limited gel-forming ability of coconut proteins. Similarly, the curd tension of T_6 (38.50 g) was lower than that of the control (57.62 g), reflecting a softer texture. According to Yin *et al*. (2024) the structural differences in plant proteins result in weaker, less cohesive gel matrices compared to dairy proteins, leading to lower viscosity, firmness, and curd strength in plant-based yoghurts.

The peroxide value of the selected coconut milk yoghurt was significantly higher (0.80 milleq./kg) than that of the control (0.15 milleq./kg), indicating increased lipid oxidation. This rise in peroxide value is likely due to the higher fat content in T_6, which makes it more susceptible to oxidative rancidity. Gumus and Decker (2021) reported that increased surface lipids and fat content in food matrices significantly contribute to elevated peroxide values during storage. The higher peroxide value obtained in coconut milk yoghurt may be attributed to the differences in lipid composition and antioxidant content. Coconut milk contains a higher proportion of unsaturated fatty acids, which are more susceptible to oxidation.

The TSS content was slightly higher in the coconut milk yoghurt sample (15.5/ °Bx) compared to the control (14/ °Bx), though this difference was statistically non-significant. Yaakob *et al*. (2012) observed that ingredient composition and fermentation dynamics significantly affect the TSS levels in coconut-based yoghurts, as microbial activity can hydrolyse polysaccharides into simpler, soluble forms.

Coconut milk incorporated yoghurt showed a slight reduction in total sugars (8.5%) and reducing sugars

(3.9%) compared to the control (9.2% and 4.7%, respectively), though the differences were statistically non-significant. This reduction is primarily due to the metabolic activity of lactic acid bacteria, which utilize available sugars for energy and acid production during fermentation. Additionally, coconut milk contains lower levels of fermentable sugars and a higher proportion of non-digestible polysaccharides compared to dairy, contributing to the overall lower sugar content in coconut-based yoghurt. Similar reductions in sugar during plant based yoghurt fermentation have been reported by Kim and Han (2019).

The carbohydrate content was slightly higher in the selected coconut milk yoghurt (T_6) (5.57 g/100g) compared to the control (4.50 g/100g). This increase can be attributed to the natural carbohydrate composition of coconut milk and the potential addition of sugars or thickeners to achieve a desirable texture and flavour in plant based yogurts (Walther *et al*., 2022).

A significant reduction in protein content was observed in the coconut milk yoghurt (2.28 g/100g) compared to the control (3.60 g/100g). This decrease is primarily due to the naturally low protein content of coconut milk, which lacks the casein and whey proteins that are abundant in cow's milk. As reported by Jeske, Zannini, and Arendt (2018), coconut-based yoghurts generally provide lower protein levels than their dairy counterparts due to the limited protein contribution of the base ingredient.

Coconut milk yoghurt exhibited a significantly higher fat content (12.10 g/100g) compared to the control (3.29 g/100g), which contributed to its elevated energy value (142.90 Kcal/100g vs. 79.2 Kcal/100g). This increase is primarily attributed to the naturally high saturated fat content of coconut milk, particularly its medium-chain triglycerides (MCTs) such as lauric acid. Since fats provide approximately 9 kcal/g more than double the energy yield of proteins or carbohydrates the higher fat level directly influenced the caloric density of the coconut based yogurt. D'Andrea, Kinchla, and Nolden (2023) reported that coconut-based yogurts generally exhibit significantly higher fat and energy values compared to dairy yogurts due to the lipid rich nature of their plant base.

CONCLUSION

The study demonstrated that coconut milk can be successfully incorporated into yoghurt formulations to produce a value-added, plant-based alternative with good sensory, functional, and nutritional properties. Among the treatments, coconut milk yoghurt prepared by incorporating 60% coconut milk(T_6) was found to be the most acceptable, scoring high for appearance, texture, flavour, and overall acceptability. Compared to the control, T_6 exhibited significantly higher fat and energy values owing to the presence of medium-chain triglycerides (MCTs) in coconut milk, while protein and carbohydrate contents were relatively lower. Despite a modest reduction in water holding capacity, viscosity, and curd tension, the product maintained a stable texture and oxidative quality. The incorporation of coconut milk into cow milk yoghurt enhances the nutritional profile by contributing functional lipids such as medium-chain triglycerides (MCTs), which are easily digestible and known for their energy-yielding and antimicrobial properties. This hybrid formulation offers a balanced combination of dairy-based proteins and plant-based fats, improving digestibility and creating a unique texture and flavour profile. The formulation developed in this study meets consumer demand for nutritious, plant-based options while contributing to product diversification and market expansion within the dairy alternative category.

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