PROCESSING AND EVALUATION OF FUNCTIONAL PANEER FROM COCONUT (*COCOS NUCIFERA L.*)MILKAND COW MILK BLENDS

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Abstract

Paneer is an Indian traditional milk product which occupies an important place as a base product for the production of various culinary preparations.Paneer is anutritious and wholesome food. It provides one of the methods of conserving, preserving and prolonging shelf life of milk solids in ahighly concentrated form.For coagulation of milk 1% of lime juice, which contains citric acid, was used(provide Ref.). The shelf life of the developed product during room temperature is just about3 dayswhile under refrigerated conditionits life is about 15 days (This is general statement – delete it).The growing public awareness about nutrition and health care research strengthen the potential of health beneficial properties of functional foods. Hence, there is a need to identify newer sources of nutrientshavingdesirable functional traits.With the current growing awarenesson health aspects nationally and internationally among the consumers, the demand for functional food has increased(substantiate this growth pattern with statistical data in some specific period).This has forced the food industry for launching indigenous dairy products possessing functional traits(this aspect was missing here – based on previous sentence!)in the market with acceptable sensory characteristics. The present study was undertaken(it is 1 word) to produce paneer like productfrom a blend of cow milk and coconut milk at variedproportions (i.e.90:10, 80:20, 70:30).Chemical quality (moisture, fat, protein, and yield – yield is not chemical aspect!!) and microbial quality (TPC, yeast and mold, coliform) were analyzed. The functional (in what way was paneer functional??)coconut *paneer* with 90:10 ratio of cow milk and coconut milk was found to be best (in which aspect, sensory, yield, functional trait, etc.?)among others. The sensory acceptability of the resultant paneer was in decreasing order as follows: P0 > P1> P2> P3.(It is imperative to dwell on which code is for which product – P0 to P3) The fresh cow milk *paneer* (P0) had proximate composition (per cent) as follows: 50.78 moisture, 20.39 protein, 22.8 fat,0.22 acidity as lactic acid (LA) and pH of 5.3; the calcium and iron content were 198.0 and 2.20 mg /100 gproduct respectively. (When fiber was not there, it is pointless to indicate 0)The functional (in what aspect the product could be termed 'functional'?)coconut *paneer*P1prepared from milk blend 10: 90 (coconut milk: cow milk)had proximate composition (per cent) as follows: 52.05 moisture, 20.55 protein, 23.75 fat, 0.20 acidity as LA and a pH of 5.6; the calcium and iron content were 192.0 and 3.12 mg /100 g product respectively. The overall acceptability score of P1 paneer was 8.40 (i.e. highly acceptable) as against such pertinent score of 8.10 for paneer sample P0. The unit cost production of 100 g of the P1 *paneer*(since proportion of cow milk is much more than of coconut milk – you cannot name product as coconut paneer at all!)was Rs.(use latest Rupee font symbol)25/100gwhereas control was priced at Rs.(use latest rupee font)22.0/100 g(respectively will not appear).

Key words: Paneer, Cow milk, Coconut milk, composition,Sensory quality, microbial count

Functional could have been printed – if some functional traits would have been determined (i.e. Essential amino acids, essential fatty acids, antioxidative potential – DPPH, TRAP test, etc.)

INTRODUCTION

Coconuts (*Cocos nucifera* L.) is commonly called "**tree of life**" because of its of its nutrients and myriad uses. It is classed as a fruit and frequently confused for being a nut, the coconut is actually a one seeded drupe. It provides a good potential source of proteins(protein content in coconut milk is quite low; about 2.3% or so – to be claimed a potential source!!) with good nutritional value and a relatively well-balanced amino acid profile(Reference required). The world production of coconut averaged about 51.01 billion(deleted nuts). It is a highly valued ingredient in our eating practice for its enormous medicinal benefits(specify the beneficial health implications and at what level of ingestion of coconut milk??). However, due to its high lipid(specify content) and saturated fat content (specify proportion of saturated fat out of total fat in coconut milk) it is discouraged in the diet of patients suffering from cardiovascular ailments and hypertension. (Ganguly, 2014 – deleted Subha).

Coconut production and processing have been the predominant economic activities in rural communities in many tropical regions of South-east Asia, the South Pacific and to a lesser extent inthe west coast of Africa. Traditionally, production of coconut oil from "**copra**" (dehydrated coconut meat) has been the largest economic sector of the coconut industry (Hagenmaier, 1977). The new products (which for example?) developed from coconut could potentially be of desirable nutritional composition especially in relation to cholesterol inducing(inducing – did you want to print 'reducing'??) fat levels, being as it is that the saturated fat content in coconut milk has been shown to be a good saturated fat(in previous paragraph you mentioned fat in coconut to be unhealthy to hypertensive and CVD persons!! – now writing 'good' – contradictory statements), easily metabolized to provide quick energy to the body (Timmen&Patton, 1989).

Coconut also has important anti-carcinogenic and anti-pathogenic properties and is less likely to cause weight gain than poly unsaturated oils (possibly you are comparing coconut oil with other PUFA oils!! Not with coconut milk!!) (Coconut Research Centre, 2004). Coconut fat helps to maintain a healthy ratio of omega-6 (ω-6) toomega-3 (ω-3) fatty acids, when consumed as a part of a diet. Coconut milk, a white opaque liquid, is an emulsion of natural oil in water, extracted from shredded coconut endosperm,(deleted either)with or without the addition of water (Simuang *et al*., 2004).

While cow's milk has nearlyequal amount of fat and protein(in actual their amount is not equal!!), coconut milk has ten times more oil than proteins. Coconut milk is considered as a valuable food for people having nutritional deficiencies since it has significant amount of Vitamin C(it contains on an average just 2.8 mg/100 g only – cannot term it as 'significant amount'), adequate natural minerals (viz., Mg, K, P, Fe), and a highquality protein (what makes it high quality protein – elaborate - is it laden with essential amino acids?).Deleted 1 sentence(Carandang, 2008). Vitamins C(this vitamin is being repeated!!), E and B vitamins(which specific B vitamins?) are abundant(vit. C is not abundant at all!) in coconut milk. Coconut milk is lactose free, unlike cow milk, and can be used as a milk substitute by those ailing from lactose intolerance.

Paneer, a wholesome dairy food, is popular indigenous variety of soft cheese (David, 2009).It is ahighly popular traditional Indian dairy product which is obtained by acid and heat coagulation of milk. Bureau of Indian Standards

(BIS 1983) specifies (BIS is not compulsory – hence word 'imposing' does not suit here!!) maximum of 60.0% moisture and minimum of 50.0% fat in dry matter for *paneer*. **Use FSSAI standards of Paneer which is mandatory for Indian dairy manufacturers.**

*Paneer*is used in a variety of forms viz. base for variety of culinary dishes. *Paneer* should preferably be marble white in appearance with close-knit (close-knit is body, not texture!)but spongy body, possessing sweetish-acidic, nutty flavour (Vera and Mathur, 1986; Bandyopadhyay and Mathur, 1987). ***Paneer*** is highly nutritious since it remains(should be ''retains'') about 90 % fat and protein, 50 % minerals and 10 % lactose of the original milk. About 5 % of the total milk produced in India is converted to *paneer* (Mathur,1995**).**76.8% of calcium and 68.3% of magnesium of the original milk got retained in *paneer(provideRef.).*Paneer is apopular indigenous variety of soft cheese (David, 2009). Over and above its high protein content and digestibility; the biological value of protein in *paneer*ranges between 80 - 86 (Khan and Pal 2011). India has emerged as the largest milk producer in the world with 132.4 million metric tonnes milk production in 2012-13 – **now we are in 2025-25 – very old figure of 2012-13 – update it** (15% of the world's total milkproduction) (NCAER, 2012 – old ref.). Out of this, an estimated 7% of milk produced in India is converted to *paneer*.(In previous paragraph you mentioned 5% of total milk produced with Ref. of Mathur, 1995??).Production of *paneer*provides one of the methods of conserving, preserving and prolonging theshelf-life of milk solids in ahighly concentrated form.

Approximately 7% of the total milk produced in India is utilized for paneer preparation (Kinjal, Patel, & Gokhale, 2015). (Ref. - Dairy Knowledge Portal)

Therefore, this research was aimed at increasing the utilization of coconut milkthrough its use in *paneer* making and in improving the nutrient content of *paneer***(no parameter of functional has come in this sentence!).** The objective of this study was to investigate the influence of incorporating coconut milk in its blend with cow milk on the proximate composition,(what about yield?), sensory quality, microbial countof *paneer*and monitor the products shelf life.

MATERIALS AND METHODS

This section (not chapter – this is not a Thesis)deals with the materials used and themethods followed during the course of the study for**the development of Functional(the developed product's functional property has not been studied at all!)*paneer* from a blend of cow milk and coconut milk.** The methodology adopted in the experiment under three aspects *viz.*, (i) To Select the coconut variety for extraction of coconut milk. (ii) To Standardize(which aspect – methodology of paneer making i.e. technology??) and development of functional*paneer*. (iii) To assess the physico-chemical quality, sensory acceptability and microbial count of the resultant*paneer*. (iv) To assess the shelf life of the resultant paneer.

METHODS

Selection of coconut variety

The coconut variety (Tall) was selected based on their quality for extraction of coconut milk from the local areas in Madurai.(when you write selection, how Tall variety was selected from amongst other few varieties of coconut – specify that! – selection means choosing best out of several coconut varieties – here you are studying only one variety!!)

Standardization of the method of *paneer* making

The *paneer*(you cannot term as coconut paneer since proportion of cow milk is more vs. quantity of coconut milk in the milk blend!!)was prepared from milk blend comprising of the following proportions of cow milk with coconut milk viz., 90:10, 80:20 and 70:30 utilizing 1% lime juice as an acidulant (i.e. paneer samplesP1, P2 and P3respectively). Control paneer was prepared exclusively from cow milk (i.e. sample P0).

The standardization process schedule used for trial

List 1. Details of treatmentsutilizing blend of cow milk with coconut milk in the preparation of *Paneer*

Proportion of the two types of milk	*Paneer* made using treatment			
	P0	**P1**	**P2**	**P3**
Coconut milk	-	10	20	30
Cow milk	100	90	80	70

List 2. Preparation of *paneer* from cow milk (Po)

S.No	**Ingredients**	**Quantity**
1.	Cow milk	1000 ml
2.	Lime juice	10 ml

List 3. Preparation of *paneer* from blend of cow milk and coconut milk (P1)

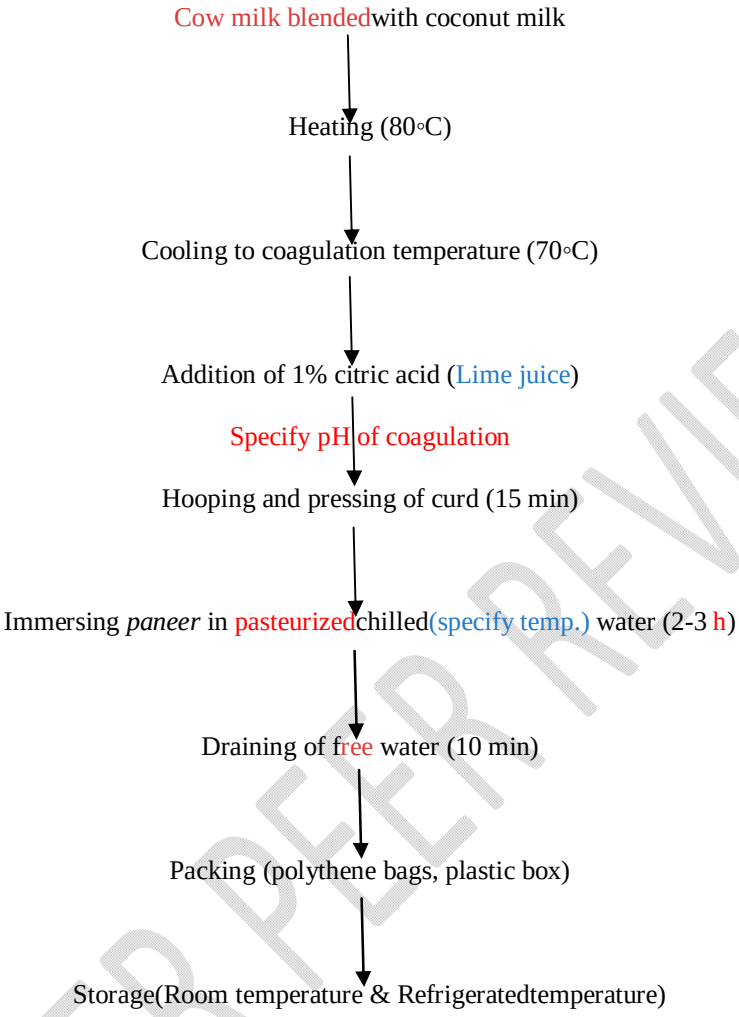
S.No	**Ingredients**	**Quantity**
1.	Cow milk	900 ml
2.	Coconut milk	100 ml
3.	Lime juice	10 ml

The quantity of lime juice should ideally vary (vs. control from exclusively cows milk) for paneer made from milk blends!

Technological means to produce paneer-like products

Chart 1. The flow chart for the preparation of *paneer*from milk blend

Milk blend



Lime juice and citric acid are entirely different entities (write exactly what you used)

CHEMICAL ANALYSES

Moisture

The moisture content of the paneersamples was estimated by Gravimetric method employinghot air oven as per the procedure given by AOAC (1995). Weigh accurately 2 g of pre-shredded *paneer*sample into the previously dried and weighed dish. Add 4 ml of hot distilled water and mix. Add 1 ml of hot distilled water to dislodge(instead of wash) the particles adhering to the sides of the dish. Place the dish in the oven maintained at 102^{o}C for 4 h. Oven drying was continued till we obtain concordant values. Dried samples were cooled in a desiccator and subsequently weighed.

Calculation

$$\text{Moisture (\%)} = \frac{\text{Loss in weight}}{\text{Weight of the sample}} \times 100 = \frac{(W_2 - W_3)}{(W_2 - W_1)} \times 100$$

W_1 = Initial weight of empty plate

W_2 = Weight of empty plate plus sample before drying

W_3 = Final weight of empty plate plus sample after drying

Protein

Principle (No need to mention principle of test)

The blue colour developed by the reduction of the phosphomolybdic-phosphotungstic components in the Folin – Ciocalteau reagent by the amino acids tyrosine and tryptophan present in the protein plus the colour developed by the biuret reaction of the protein with the alkaline cupric tartrate are measured in the Lowry's method.

Reagents

i. Folin–Ciocalteau reagent (**reagent D**)-reflux gently for 10 hours a mixture consisting of 100g sodium tungstate ($Na_2WoO4.2H_2O$), 25g sodium molybdate ($Na2WoO4.2H_2O$), 700ml water, 50ml of 80% phosphoric acid, and 100ml of concentrated hydrochloric acid in a 1.5L flask. Add 150g lithium sulfate, 50ml water and a few drops of bromine water. Boil the mixture for 15 min without condenser to remove excess bromine. Cool, dilute to 1L and filter. The reagent should have no greenish(something missing sentence) 20% sodium carbonate in 0.1N sodium hydroxide (**Reagent A**).

ii. 0.5% Copper Sulphate ($CuSO4.5H_2O$) in 1% potassium sodium tartrate **(Reagent B)**

iii. Alkaline copper solution.: Mix 50ml of reagent A and 1ml of reagentB prior to use (**Reagent C)**

iv. **Protein Solution (Stock Standard)**

Weigh accurately 50mg of bovine serum albumin (**fraction V**) and dissolve in distilled water and make up to 50ml in a volumetric flask.

v. **Working Standard Solution**

Dilute 10ml of the stock solution to 50ml with distilled water in a standard flask. 1.0 ml of this solution contains 200µg protein.

Procedure

Extraction of protein from Sample

Extraction is carried out with buffers used for the enzyme assay. Weigh 500mg of the sample and grind well with a pestle and mortar in 5-10mL of the buffer(which is the buffer??). Centrifuge and use the supernatant (how much supernatant from what quantity centrifuged in centrifuge tubes?) for protein estimation.

Estimation of Protein

1. Pipette out 0.2, 0.4, 0.6, 0.8 and 1.0ml of the working standard into a series of test tubes.
2. Pipette out 0.1 ml and 0.2 ml of the sample extract in two other test tubes.
3. Make up the volume to 1.0 ml in all the test tubes. A tube with 1.0ml of water served as blank.
4. Add 5.0 ml of reagent C to each tube including the blank. Mix well and allow to stand for 10min.
5. Then add 0.5 ml of reagent D, mix well and incubate at room temperature in the dark for 30min, blue colour is developed.

Take the reading(in which equipment – Spectrophotometer – its make, place?) at 660nm. Draw a standard graph (x and y-axis which parameters!) and calculate the amount of protein in the sample.

Fat

The fat content of the *paneer*sample was determined by the method (Name the method – i.e. Babcock/Rose Gottlieb, etc.)described by Cohen (1917 – Too old reference to be used in 2024??). The lipid in the sample was extracted with petroleum ether (60-80°C) in Soxplus apparatus for 2 h. The solvent was thenevaporated(where, temperature maintained?) and the remaining residue was weighed. The fat content was expressed as percentage.

Calculation

$$\text{Fat (\%)} = \frac{(W_3 - W_2)}{W_1} \times 100$$

W_1= Weight of sample used; W_2 = Weight of flask; W_3 = Weight of flask with fat residue

ASH CONTENT

Ashing of milk/dairy products is ideally carried out using Muffle furnace – check FSSAI manual/BIS procedures

Preparation of ash solution for estimation of minerals

An aliquot of 1 gof sample was acid digested using triple acid (nitric, sulphuric, perchloric acids in the ratio 9:2:1; w/w/w?) by keeping in sand bath until a clear solution was obtainedand filtered through Whatman No. 41 ash less filter paper. The filtrate was made up to 100 ml and the obtained triple acid extract (ash solution) was used for the estimation of calcium, magnesium, phosphorus and other micro nutrients such as iron, zinc, manganese and copper.

Iron

The clear extract of prepared triple acid extracts was fed into the Atomic Absorption Spectrophotometer (AAS). The absorption of light by the atoms of the element in the vaporized sample was related to the concentration of the desired metal (iron) in it. The concentration was measured by using the wavelength of 248.33 nm. The concentration of the iron in the solution was measured by comparison with absorbance measurements on standard of known composition(is it concentration or composition??).

Calcium

Estimation of calcium in *paneer* was carried out by the Versenate method(provide Ref.). A 10ml of triple acid extracted sample added with10% NaOH solution drop by drop and 5 ml added to adjust the pH to 12(what was pH before adjustment?). Added pinch ofmuroxide indicator. This solution was titrated against 0.02N ETDA(is it EDTA??) (colour changed from pinkish red to purple or violet).

$$\text{Calcium content} = \frac{0.0004 \times \text{titre value}}{\text{Volume of extract (ml) (not ''extracted'')}} 100 \times 1000$$

Estimation of pH

The pH of the sample was determinedby the method ofHart and fisher (1971). An aliquot of 10 g of sample was mixed well by stirring with 50 ml of distilled water using glass rod and the pH of the suspension(at what temperature?) was determined in the pH meter(Make and place of pH meter?).

MICROBIAL ANALYSIS

The microbial countof the *paneer* was enumerated by the method described by Istavankiss (1984). The microbial load such as total plate count (delete 'for bacteria''), yeast and mould count, coliform count for freshly prepared product (i.e. 0 day) and those stored under refrigeration/room temperaturefor 3 days were analyzed based on the procedure given below.

Preparation of medium

Plate count agar was used for enumeration of total aerobic bacteria (TAB), Malt Extract agar medium was used for enumeration of yeast and mould, coliforms were enumerated using Violet Red Bile Agar(These agars were from which Company, place?).

Microbial analysis

An aliquot of 1 mlof the sample (how paneer can be taken in volume – 1 ml??)was taken for microbiological enumeration and serially diluted. Dilution of 10^5 and 10^6, 10^3 and 10^4, and 10^3 and 10^4 was taken for TAB, yeast and mould count and coliform countrespectively. One ml of the serial dilutions of the samples was taken in petri-plates and appropriate media was added for the specific organisms. Plates were incubated at room temperature for 24 to 48 h for bacteria, coliforms and 3 days for yeast and mold(for Y & M count temperature of incubation should have been lower? What was room temperature for other counts – specify that) and the colonies were counted and expressed ascfu/g.

ORGANOLEPTIC EVALUATION

The *paneer*samples wereevaluated organoleptically for various quality attributes such as colour, texture, flavour, taste and overall acceptability, by a panel of 10 trained and untrained(what was the basis in choosing untrained judges as well??) judges using 9 point hedonic scale (Watts *et al*., 1989).

COST ANALYSIS

Cost analysis of cow milk *paneer* and the experimental paneer made out of milk blend (cow milk: coconut milk of 90:10 w/w) were carried out systematically(provide Ref. and how systematically cost was determined – show it).

STORAGE STUDY

The shelf life study of the developed products were assessed for a period of 7 days(stored at what temp.; in which package specify here). Two sets of all the products (each containing 100g) were kept in a packaging material (plastic boxes, 80 gauge polythene bags) for a period of 7 days under Room temperature (specify how much was temp.?) and Refrigerator storage (specify temp.).

RESULTS AND DISCUSSION

This study deals the quality characteristics of paneer when made from milk blend comprising ofcow milk and coconut milk in order to improve the nutritional quality (title was ''functional property'' here you are mentioning nutrient quality only!!) of *paneer*. The main purpose for using the coconut milk is due to their nutritive value and to study their acceptability when infused with milk in paneer as dairy product.

Table: 1 Different treatment using Coconut milk for preparation of *Paneer*(This Table is repeated – delete it)

Proximate Compositions of Fresh Cow Milk *Paneer*

Table: 2. Proximate Composition of Cow milk *Paneer*

Constituents (not product)	**Value (%)**
Moisture	50.78
Protein	20.39
Fat	22.80
Carbohydrates	1.40
Ash	Provide value
Acidity	0.22 % LA
Iron (mg/100g)	2.2
Calcium (mg/100g)	198.0
pH	5.3

Ash content comes to about 4.63% (by difference of TS – solids other than ash); in literature ash content of panner lies between 1.7-2.1% only.

Changed sequence of Carbohydrates, Fe and Ca; Add Ash content in above table

Table 2 showed that the fresh cow milk *paneer*had proximate compositions(per cent) as follows: 50.78 moisture, 20.39 protein, 22.8 fat, 0.22% LA acidity and pH of 5.3; the calcium and iron content were 198 and 2.1 mg /100 g product respectively.The moisture and protein contents increased with decrease in fat (if moisture increases both protein and fat should decrease – why this was not the case – comment on this aspect!!)content of *paneer*. Similar findings were reported in *paneer* by Ashraf Pal and Yadav (1992) and Singh and Kanawjia (1988) and the control paneer had the highest moisture content (i.e. 64.45 % - this moisture is too high!!)while the experimental *paneer*(instead of T3 write what was treatment in experiment) had the least moisture(i.e. 56.69 %) content (Manual in Dairy Chemistry, ICAR 1972 – This reference seems odd here!!).

Table : 3 Proximate Composition of*Paneer* P1

Constituents	**Value (%)**
Moisture	52.05
Protein	20.55
Fat	23.75
CHO	1.80
Ash	Value
Iron (mg/100g)	3.12
Calcium (mg/100g)	192.00
Acidity	0.20 % LA
pH	5.60

Here ash content comes to 1.85% (by difference); while for control product ash was very high 4.63%

Why composition of P2 and P3 paneer were not determined, since they were also prepared

Go for statistical analysis of composition, pH comparing all the 4 paneer samples; one control and 3 experimental

Table 3 revealed that the experimental *paneer*P1 prepared from milk blend (cow milk: coconut milk; 90:10 w/w) had composition (per cent) as follows:52.05 moisture, 20.55 protein, 23.75 fat,0.20% LA as acidity and pH of 5.6; the values of calcium and iron were 192.0 and 3.12 mg /100 g product respectively.(whose study is this result with T3 as one experimental paneer?? – AOAC just specifies the analytical methods for dairy foods!) Experimental

paneer (T3) had highest average protein of 30.58 %whereas control *paneer*had lower protein content (i.e. 26.17 %) (AOAC 1980).Control (T0) had highest fat content (i.e. 14.64 %), while experimental *paneer* (T1 - specify what was their treatment??)had the least fat content (i.e. 11.62 %)**(**AOAC 1980).

Sensory quality of the Standardized *Paneer*

Consumer acceptance of any food product is a desirable criterion before it is launched in the market. In this context, sensory quality of the paneer samples was subjected to sensory evaluation. Sensorial evaluation of product took cognizance of attributes such as colour and appearance, consistency, flavour, taste and overall acceptability. Ninepoint hedonic scale was used to score the product.Do not repeat what was already mentioned on this aspect in Materials and Methods section (deleted those sentences).

First go for statistical analysis to determine whether the scores of samples are significantly ($p<0.05$) different or otherwise. Then discuss in detail each attribute as commented by the judges to have such high/low score, depending on the sample being judged!!

Table : 4Sensory scores of Paneer Product

Sensory attributes	**Sensory Scores (out of 9.00) of *Paneer***			
	P0	P1	P2	P3
Colour &appearance	8±0.67	8.2±0.79	8.4±0.70	8.3±0.82
Flavour	8±0.47	8.2±0.92	8±1.15	7.8±1.23
Texture	8.2±0.79	8.0±0.57	7±0.94	7.1±0.88
Taste	8.1±0.74	8.4±0.70	7.6±1.17	7.5±1.08
Overall Acceptability	8.1±0.73	8.4±0.70	7.8±1.03	7.7±1.20

There is no statistical analysis at all
Why sensory evaluation was not carried out during storage study??

Shelf life of product

The shelf life of the developed products was assessed for a period of up to7 dayswhen stored at room and refrigerated temperature(specify temp. of both – room and refrigerated condition).Two sets of all the products (each containing 100g) packaged in packaging material (80 gauge polythene bags; secondary package as plastic box). Both the sets of each product were examined visually for microbial infestation and noted down the period in which first infiltration(instead of visual mold growth, sensory perception was to be undertaken – even before mold growth, off-flavour can manifest in stored product!!) was seen.

Table : 5 Shelf life of control anddeveloped paneer at two storage conditions

S.No	Sample	Shelf lifeat	
		Room temperature	Refrigerator
1	Control (P0)	3 days	7 days
2	Experimental *paneer* (P1)	3 days	7 days

Specify what was room temp. and refrigeration temperature too

Table 5 revealed that the shelf life of both control (P0) and experimental *paneer* (P1) was 3 days under room temperature and 7 days under refrigerated storage conditions. Both the products (control and experimental)had similar shelf stability when stored under specific temperature.

Sensory analysis (quantitative and/or descriptive) is often used to assess the flavor, appearance, texture and other attributes of food products as a function of processing parameters(not necessarily process conditions – in your case it should be coconut milk as an additive and storage of paneer!!)(Kwok *et al.*, 2000). Yoghurt(Paneer and yoghurt are entirely different entities – you cannot compare these)manufactured from cow and coconut milk mixtures recorded the highest levels of flavour which may be due to the good coconut flavor.

Yield of *paneer* *(This aspect should be taken after proximate composition)*

The yield of cow milk paneer was 134 g/lit(should be per kg of milk – not volume (litre)) which was lower (you mentioned higher yield; in actual the control paneer yield was lower vs. experimental paneer) than the yield of paneer-like product (i.e. 162 g/kg) obtained from milk blend (i.e. cow milk: coconut milk of 90:10 w/w).The cheese product was formed by the coagulation of proteins in the cow and coconut milk, thus the greater protein content the greater the yield of cheese product (Adedeji and Nwanekezi, 1987).

Microbiological Quality of the Product

Table 6 Microbial count (is it of freshly prepared product – write so!)

Type of count	**Microbial count of*Paneer***	
	P0	**P1**
Total Plate -10^6 cfu ml^{-1}	42.20	34.80
Yeast &Mold-10^4 cfu ml^{-1}	14.60	12.90
Coliform-10^3 cfu ml^{-1}	Nil	Nil

Try to indicate count of both TPC and Y&M as $\log_{10}$cfu/g (not based on the dilution of sample taken)For Coliform count actual sample should be taken – not 3rd dilution – Legal standard specifies Absent/g of sample!!)

The microbial count of the fresh cow milk *paneer*and experimental*paneer*wereare depicted in Table 6. Total bacterial count ranged between 34.80log 10^6 cfu ml^{-1}, (expression of count is not proper)whereas yeast and

mold count ranged from 12.90log 10^4 cfu ml^{-1},(value depicted is incorrect!) coliform count was absent per gram of samplethroughout the storage period. **(Values expressed as log10cfu/g and as value x 10^x/g is entirely different entities!!)(There is no data for count of microbe during storage in Table 6 at all –storage is mentioned at end of the sentence)**

Kumar and Bector (1991) reportedyeast and mold count of control *paneer* samplestored at 15°Cto be 10 cfu/g which increased in number to 50/g on 4thday of storage; the count was 250/g on 7th day of storage. Venkateswarlu et al. (2003) reported yeast and mold count of *paneer*to be 2.45/gof *paneer* sample. Kumar and Bector (1991) reported the initial level of coliform count of control (which product – write?)increased from 90/g to 3.5×10^3cfu/gand 8.0×10^6 cfu/gas noted on 4th and 7thdays of storage (specify storage temp.)respectively.

Cost Analysis

The unit cost for production of 100 g of the experimental*paneer*(P1) was Rs.25,whereas the cost of control paneer (P0) wascomputed at Rs.22for that serving size.(delete respectively; use latest Rupee font for Rupees)

Conclusion – Missing altogether

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