Original Research Article

Proximate Analysis, Phytochemical Analysis, Colour Estimation, Antioxidant, Antibacterial Analysis, Shelflife Analysis of Sugarfree Burfi optimization from quinoa seed powder and stevia.

UNDER PEER REVIEW

ABSTRACT

Keywords – stevia, quinoa, incorporate, optimized, burfi.

Quinoa seed powder and stevia has several health benefits. stevia has been naturally incorporated with sugar making it beneficial for diabetic patients. Burfi is an Indian popular sweet with harmful content and qualities. So, burfi was prepared using quinoa seed powder and stevia to incorporate benefits of plant compounds quercetin and kaempferide with the help of physicochemical analysis, proximate analysis, phytochemical analysis, antioxidant analysis shelf-life analysis and colour estimation analysis. The moisture content of optimized burfi and control burfi was obtained to be 15-20 % percent respectively. The protein content of optimized burfi and control burfi have value 18.97-20.286 % percent respectively. The fat content of optimized burfi and control burfi were 18.630-21.972 % percent respectively. The ash content of optimized burfi and control burfi 3.4-4 % percent respectively. The Titrable acidity of optimized burfi and control burfi were 1.035-1.16 % percent respectively. The carbohydrate of optimized burfi and control burfi were 31.66-25.708 % percent respectively. The crude fiber of optimized burfi and control burfi were 0-1.25% percent respectively. The calcium of optimized burfi and control burfi were 571-520 mg respectively. The pH of optimized burfi and control burfi were 7.99-8.03 pH respectively etc. Antioxidant activity is analysed using the in standard spectrophotometer method. Optimized quinoa burfi was investigated for their in-scavenging activities using 2, 2-diphenyl-1-picrylhydrazyl (DPPH). Then we check the Shelflife at 10 days. T_0 - 3.27×10^2, T_1 - 3.36×10^2, T_2 - 4.72×10^2. Coliform will be 0. The quinoa seed powder expands DPPH searching action up to 43.13μg μg of focus Other khoa burfi making it good for diabetic and ordinary individuals. The research was done at the research centre of food science examination Laboratory, Babasaheb Bhimrao Ambedkar University. Lucknow (INDIA)

1.INTRODUCTION

Quinoa (Chenopodium Quinoa Willd) is a grain-like harvest which is customarily utilized for nourishment and food to Andean native societies for quite a long time. As of late, lights were tossed on quinoa and it was portrayed as "one of the 21st century 's grains" for what it's worth of a high healthy benefit; it is a gluten free and having restorative properties permitting it to be utilized as a nutraceutical and a utilitarian food. The high dietary benefit of quinoa might be credited to its exceptional substance organization as it contains a protein of a high amount and quality with a reasonable fundamental amino corrosive example. Additionally, it contains nutrients like nutrients E, C, B2, B6 and folic corrosive with somewhat high sum. Additionally, its mineral substance is of an incredible worth as it contains calcium, magnesium, copper, iron, zinc and potassium with generally high sum contrasted with different grains and a considerable lot of these minerals are of a decent bioavailability enough to from a reasonable eating routine. In addition to high healthy benefit and being liberated from gluten, quinoa was likewise answered to have numerous medical advantages. It

tends to be utilized for the two youngsters and old, for lactose bigotry, the individuals who are experiencing either pallor or heftiness or diabetes or ciliac sickness or dyslipidaemia. It has a high cancer prevention agent and mitigating strength and can be utilized as anticancer, neuroprotective and immunomodulatory. These medical advantages are because of its substance of protein, mineral, nutrients and fiber notwithstanding its substance of phytochemical and bioactive parts. Among the phytochemicals of quinoa are, it has been accounted for that quinoa is among the most extravagant wellsprings of phytoecdystroids containing from 138 to 570 μg/g. Phytoecdystroids are polyhydroxylated steroids associated with plant protection and they have a wide scope of medical advantages including hostile to osteoporotic, anabolic execution upgrading, and against diabetic. Quinoa is rich in its nutritive worth, with remarkable protein content and its protein supplement is equivalent to that of milk protein. It likewise has a magnificent amino corrosive creation and amino acids like lysine, methionine and cysteine, additionally presents in higher sums than normal oat and vegetables and can go about as a potential protein substitute in food.

Stevia rebaudiana Bertoni is a little enduring bush of the Asteraceae (Composite) family that is local to Paraguay, Brazil, and Argentine. The leaves of this plant have been utilized by native individuals for quite a long time in drugs and to improve beverages like mate, a green natural tea. The plant was first brought to the consideration of the remainder of the world by the botanist Moises Santiago Bertoni in 1887, who gained of its properties from the Paraguayan Indians. The compound portrayal of the normal constituents of the plant known as steviol glycosides, which are answerable for its particular sweet taste, was not recognized until 1931 when 2 French scientific experts, Bridel and Lavielle, secluded stevioside, an essential steviol glycoside from stevia leaves. Stevia is a rich wellspring of numerous bioactive compounds. During the information mining system, it was tracked down that few vegetative parts, yet primarily from the leaves of stevia.

Dairy and dairy food products are highly nutritious and important role in income generation and food security. In developing countries dairy industry is a direct source of income and provide employment to the poor and has a sustainable contribution in poverty reduction (Burchi et al.,2011)

Burfi is one of the most famous milk-based desserts in India. Burfi is ready by warming a combination of concentrated milk solids and sugar to a close to homogenous consistency followed by cooling and cutting into little cuboids. Beating and whipping tasks before cooling are at times rehearsed to acquire an item with smooth surface and intently weave body. A few assortments of burfi are accessible in the market like plain or mava/khoa burfi, foods grown from the ground, cashew burfi, chocolate, saffron and rava burfi. Burfi sold industrially differs broadly in variety, body, surface, pleasantness and flavour attributes (Sarkar et al. 2002).

2. MATERIAL AND METHOD –

- **PREPARATION OF SAMPLE**

  Burfi is ready by following the traditional technique of prepare. Control sample are prepared according to the standard burfi preparation method given by adding 10% sugar in 90 gm khoa. To obtain standard sample. In sample 1 we will replace sugar with stevia. Then we will do the burfi preparation in which we will put 4% stevia in gm khoa. To obtain standard sample. In sample 2 we will add quinoa to the burfi till the nutritive value of the burfi increase. Then we will make burfi mixed 20% quinoa seed powder in 74 gm khoa and add 6 gm stevia.

- **Characterization of burfi**

  The Functional and dietary portrayal of burfi arranged utilizing quinoa seed powder and stevia the accompanying portrayal quantitatively:

  Moisture content b) Ash content c) Fat content d) Tithable acidity e) crude fiber f) protein g) calcium h) carbohydrate I) pH.

- **Proximate Analysis**
- **Determination of Moisture content**

  Take 5gm a sample in a Petri plate which is made constant previously and keep it in a hot air oven 110°C for 1 hour. Take the weight after an hour and again keep it for 30 min if the weight content. Calculate the moisture conduct by the following –

  Formula of moisture content-

  Moisture content – $w_1 – w_2 \times 100 \div$ weight of sample

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- **Determination of Ash content**

  In this strategy ,2 grams of sample weighing by using weighing balance. Ignite the dish and charring for 15-20 minute. Then put the crucible in the muffle furnace (525^oC) for 2:30 hours. Put crucible in desiccator for 10 min. then weight the crucible.

  Formula – Ash % = $(w_2 - w_1) \times 100 \div w$ (gm)

- **Determination Fat content**

  In this method, weight the flask makes it constant. Take 5 gm dried sample make a thimble and keep the product unit. Prepare the setup, use benzene as a solvent run the solvent for 3 hours. Vaporize the solvent from the flask, weight the flask.

  Formula of Fat -

  Fat = weight of flask after – weight of flask before × 100 ÷ weight of sample

- **Determination of Protein**

  In this method, (Reagents preparation) mixed indicator 0.1 % bromocresol green and 0.1 % methyl red indicator in 95 % alcohol 10 ml bromocresol green $_+$ 2ml of methyl red -solutes. 10 gm boric + 500 ml of boiling distilled water. 0.01N Hcl. 30 % NaOH (150 gm of NaOH + 350 ml of distilled water. Catalyst for digestion, mixed 0.5 g of K_2So_4 and 20 gm of $CuSo_4$, $5H_2O$. 2gm dried sample. 2 gm catalyst mixture + 25 ml H_2So_4 for digestion 60° C till solution become transparent blue. Keep for distillation make up to ml of digested sample. Take 20 ml of sample. Receiving flask 20 ml Boric acid + 4 drops of indicator. 10 ml NaOH. 40^oC is distillation. The sample was titrated with NaOH with end point indicated by a change greenish to pink colour. The volume of the acid for each sample distilled was noted as well as that of clear.

  Protein formula –

  Nitrogen = (sample titer – blank titer) - N of Hcl ×14 ×100×100 ÷ weight of sample × Aliquot take × for distillation ×1000

- **Determination of Crude fiber**

  2 gm of burfi sample. Wash with distilled water on hot plate for 10 min at 60° C. Treat with 1.25% dilute H_2So_4 on plate for 15 min. wash with distilled water for 10 mi. Wash with 1.25 % NaOH on hot plate. Wash with water 2 times on hot plate for 10 min. Dry in hot air oven at 100^oC for constant weight. Take out from the hot air oven and cool it in the desiccator. Keep in muffle at 550^oC for 2 hr.

  Crude fiber formula -

  % Crude fiber = $T_1 - T_{2\times}$ 100 ÷ T_O

- **Determination of Total Titratable acidity**

  2 gm sample was dissolved in 30 ml of water. Mixed then filtered and make up to 100 ml. 10 ml of the filtrate was pipetted into a beaker Add 2-3 drops of phenolphthalein indicator. Titrated against the standard 0.01 N NaOH solution until a light pink colour was attained. noted burette reading.

- **Determination of pH**

  1 g burfi sample dissolved in 10 ml distilled water pour in the beaker and mixed the sample. The pH checked using the pH meter. Check the reading from the pH meter. The pH meter was standardized using standard buffer of pH 4.0 and 7.0.

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- **Determination of Carbohydrate**

  Carbohydrate formula -

  % carbohydrate = 100 – (% protein +% ash +% fat+% moisture + % crude fiber)

- **Determination of calcium**

  Pipette an aliquot (20ml) of the ash solution obtained by dry ashing to a 250ml beaker. Add 25 to 50 ml of H_2O +10 ml of saturated ammonia oxalate solution and 2 drops of methyl red indicator. Make the solution slightly alkaline by add of dil ammonium and then slightly acidic with a few drops of acetic acid until the colour is faint pin or pH. That the solution to the boiling point and leave overnight. filter through Whatman paper No. 42 paper and wash with distill H_2O till the filtrate become oxalate free. (Chloride test using $AgNO_3$) beaker the point of the filter with glass rod washes the pipette first using distilled water using wash bottle into the beaker in which the calcium was precipitated. Wash with hot distilled water. titrate while hot with 0.01N potassium permanganate to the first permanent pink colour. Add filter paper to the solution and complete the titration.

  The formula for calcium –

  Calcium (mg/100) = titer × 0.2 × total made up of ash solution ×100 ÷aliquot take for titration × weight of sample taken for ashing.

- **Phytochemical analysis-**
- **Phytochemical screening for tannin content of burfi**

  In a test tube, place one milliliter of burfi extract and add 1 ml of 5 % $FeCl_3$ into it. The resulting dark blue and green- black indicator that tannin is present in a extract. (Trease and Evans 1996).

- **Phytochemical screening for flavonoid content of burfi**

  To 1 ml of extract add 3-4 ml of sodium hydroxide drop by drop. The existence of yellow color indicator the presence of flavonoid content in burfi. (Odebiyi and sofowara,1978).

- **Phytochemical screening for quinones content of burfi**

  Briefly add 1 ml of extract into test tube and concentrated sulfuric acid up to 1 ml. The red color indicates the presence of quinone. (G jayapriya, 2014)

- **Phytochemical screening for phenols content of burfi**

  2 ml distilled water is added to 1 ml burfi extract in a test tube, along with a few drops of 10 % chlorine. Concentrations of phenols are indicated by the blue-green appearance of the extract. (G Jayapriya, 2014)

- **Phytochemical screening for alkaloids content of burfi**

  A test tube was filled with two milliliters of burfi extract followed by two milliliters of 1 % concentrated hydrochloric acid, and 2-3 drops of Mayer's reagent. Green or white color gives positive result of alkaloids in burfi extract. (Ogukwe et al.2004)

- **Phytochemical screening for anthocyanin and Betacyanin**

  In a test tube, 1ml burfi extract and add 1ml 2N Sodium hydroxide heat for 5 min at 100°C. Bluish green color indicator the ± ce anthocyanin and formation of yellow colour indicates the ± ce of betacyanin.

- **Antioxidant analysis**

- **Procedure of DPPH inhibition method**

  The antioxidant activity of 2, 2-Diphenyl-1-Picrylhydrazyl (DPPH) is calculated via spectrophotometer with small modifications. In methanol, the color of DPPH is dark blue. In its reduced form, the antioxidant compound changes color from purple to yellow, allowing DPPH to gain electrons. DPPH shows strong absorption at 517 nm, determined by 2, 2-diphenyl-22-pyridyl hydroxylase (DPPH). Briefly, 0.1 ml DPPH solution was mixed with 1ml of optimized

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burfi prepared in various concentrations (20,40,60,80,100 µg/ml). A control sample of 1 ml of methanol was prepared and incubated in the darkroom for 30 minutes at ambient temperature. After incubation, the absorbance of the sample was read at 517 nm using a UV Visible spectrophotometer methanol used as a blank. Reduction in the absorbance value, shows high activity in scavenging free radicals.
Note: The test tube was covered with brown paper as DPPH is very sensitive to light.

The formula for DPPH-

$$\%DPPH\ inhibition = AB\text{-}AS\times100\div AS$$

- **Determination of shelf-life analysis**
- **Yeast and Mold**

Chloramphenicol yeast agar (YGCA) was used to determination the yeast and mold maintained at 15 psi for sterilization at 121°C. prepare media and distilled water and all glassware autoclaved temperature 20°C and time 30 min. After 30 min the media and petri plate and test tube will be autoclaved after the pressure released. Then the media and Petri plate placed in the laminar. Then pour 25 ml media in the Petri plate. Then put the petri plate on the U.V light and keep it in the laminar for 10 min for the media to be solidified. Media plate, test tube, distilled water placed in laminar and U. V light is turned on for 15 min. Then 1 ml 10^{-2} dilution sample spread in media plate. The inoculation petri dishes were inoculation in incubator for 72 hours at 25°C temperature. Colony counted after 72 hours.

Yeast and Mold count (CFU in $\log_{10}$) = Log_{10} (A×B)

- **Coliform**

MacConkey agar was used to determination coliform in the quinoa seed burfi sample. The preparation media heated for 15 min in autoclave maintained at 15 psi for sterilization at 121°C. prepare media and distilled water and all glassware autoclaved temperature 20°C and time 30 min. After 30 min the media and petri plate and test tube will be autoclaved after the pressure released. Then the media and Petri plate placed in the laminar. Then pour 25 ml media in the Petri plate. Then put the petri plate on the U.V light and keep it in the laminar for 10 min for the media to be solidified. Media plate, test tube, distilled water placed in laminar and U. V light is turned on for 15 min. Then 1 ml 10^{-2} dilution sample spread in media plate. The inoculation petri dishes were inoculation in incubator for 72 hours at 25°C temperature. Colony counted after 72 hours.

Coliform formula-

Coliform = (sum of colony count from plates ×100) ÷ sum of the filtered volume

- **Antimicrobial analysis**

- **Violet red bile agar**

Violet red bile agar was used microbial analysis in the quinoa seed powder sample. The preparation media 15-10 min heated media in hot plate not used autoclave. then media pour 25 ml per Petri plate. 100µm/l sample spread in petri plate. Then put in the petri plate in the incubator 32°C for 24 hours.

Violet red bile agar = No of colonies × dilution factor ÷ volume of culture plate

- **MRS Agar**

MRS agar was used to determination microbial activity in the quinoa seed burfi sample. (MRS agar 33.35g per 500 ml of distilled water) The preparation media heated for 15 min in autoclave maintained at 15 psi for sterilization at 121°C. Cool 50°C, properly mixed and pour into sterile Petri dishes. Take 0.1 gm sample. Take the MCT tube, then 1 ml distilled water put in the MCT tubes with the help of pipette, then add the sample and mix it. Then put it in a 100 micro liter sample and spread it by putting in the media plate, then put in the incubator.

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MRS = No of colonies × dilution factor ÷ volume of culture plate.

- **Yeast / mold (DRBC Agar (Dichloran Rose Bengel Chloramphenicol Agar)**
  DRBC agar was used to determination microbial activity in the quinoa seed burfi sample. (DRBC agar 15.75 g per 500 ml of distilled water) The preparation media heated for 15 min in autoclave maintained at 15 psi for sterilization at 121°C. Cool 50°C, properly mixed and pour into sterile Petri dishes. Take the MCT tube, then 1 ml distilled water put in the MCT tubes with the help of pipette, then add the sample and mix it. Then put it in a 100 micro liter sample and spread it by putting in the media plate, then put in the incubator.
  Yeast and mold = No of colonies × dilution factor ÷ volume of culture plate

- **Determination of Color attributes –**

  Variety credits of the example were assessment by estimating the L*(100 = white; 0 = dark), a*(+, red; -, green) and b*(+, yellow; -, blue) values utilizing a Minolta variety peruse (Hesham A. Ismail 2021) values are the mean of three assurance.

4. Result and Discussion

Proximate analysis of burfi

Table 1- Result of the proximate analysis of the quinoa burfi -

Constituents	Control (T_0)	Stevia (T_1)	Optimized product (T_3)
Moisture	15.10%	17.89%	20.634%
Ash	3.4%	3.64%	4.1%
fat	18.630%	23.328%	21.972%
Protein	20.26g	21.911g	20.20g

Moisture

The moisture content of optimized burfi and control burfi was obtained to be 15-20 % percent respectively. The moisture content of control sample is significantly higher than the optimized product. This might be due to the moisture content in quinoa seed powder. This may be because of the moisture content in quinoa seed powder.

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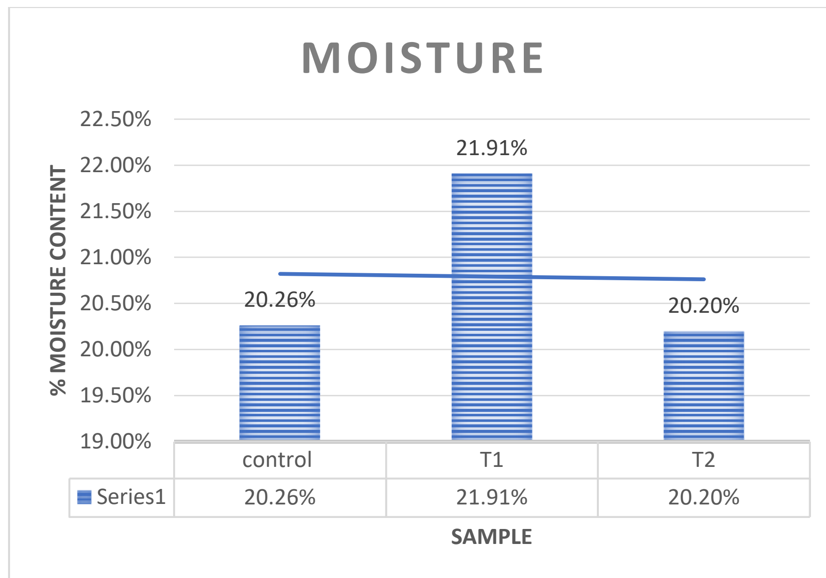

Fig 1: graph showing the standard of moisture

Ash

The ash content of optimized burfi and control burfi 3.4-4 % percent respectively. The ash content control sample is higher than optimized product.

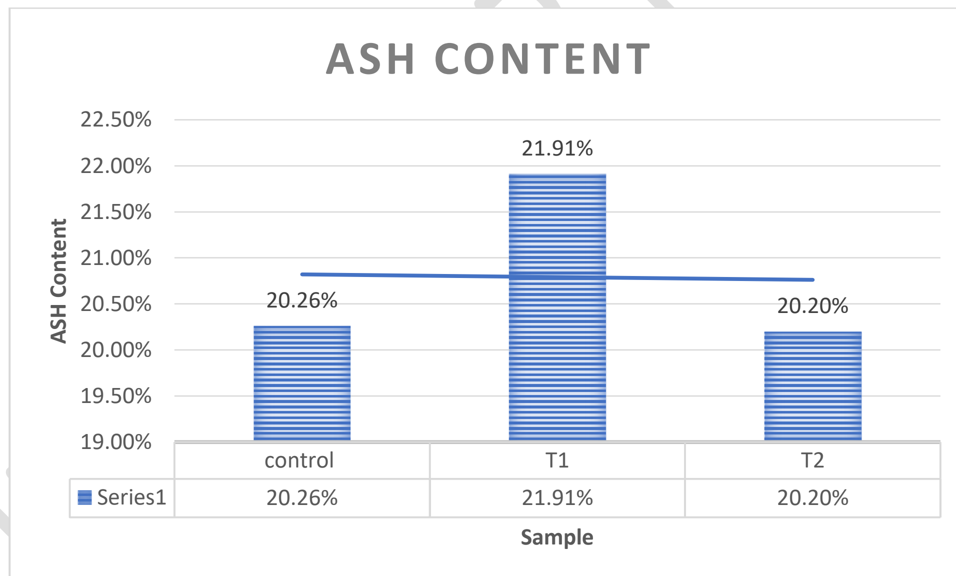

Fig 2: graph showing the standard of ash content

Fat

The fat content of optimized burfi and control burfi were 18.630-21.972 % percent respectively. The fat content of content sample is significantly higher than optimized product.

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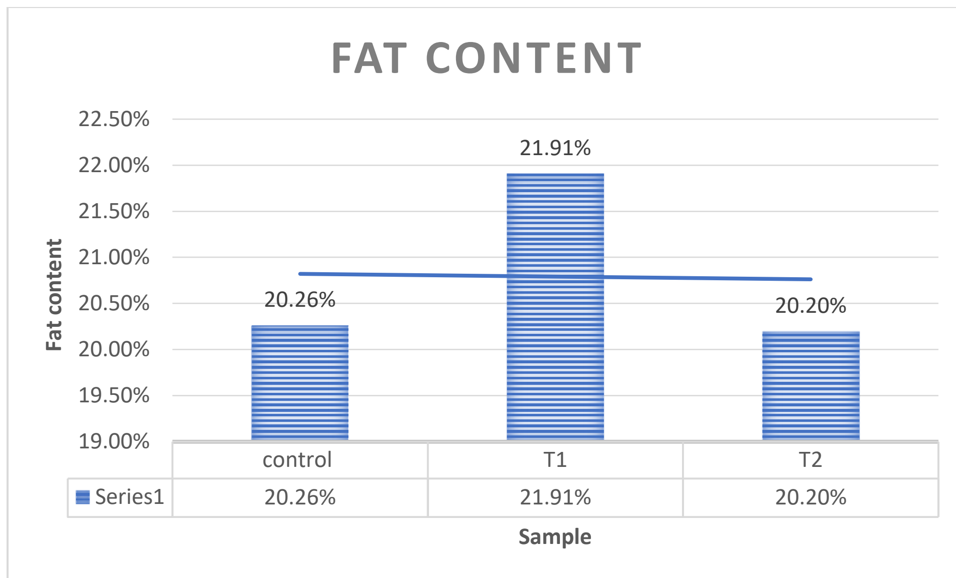

Fig 3: graph showing the standard of fat content

Protein

The protein content of optimized burfi and control burfi have value 18.97-20.286 % percent respectively. The protein content of optimized product is high due to incorporation of protein rich quinoa seed powder.

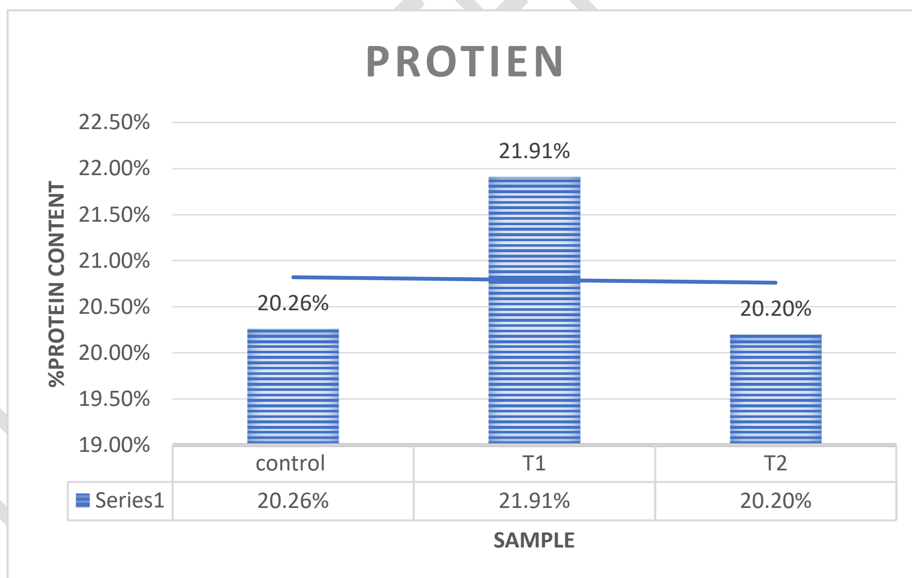

Fig 4: graph showing the standard of protein

Titrable acidity

The Titrable acidity of optimized burfi and control burfi were 1.035-1.16 % percent respectively. The Titrable acidity content optimized product is higher than control sample.

Table 2: Result of Titrable acidity in quinoa burfi

Sample	Control	T_1	T_2
Titrable acidity	**1.035%**	**0.69%**	**1.61%**

Carbohydrate

The carbohydrate of optimized burfi and control burfi were 31.66-25.708 % percent respectively. The carbohydrate content of optimized product is significantly higher than control sample.

Table 3: Result of carbohydrate in quinoa burfi

Sample	Control	T_1	T_2
Carbohydrate	**31.66%**	**22.528%**	**25.708%**

Crude fiber

The crude fiber of optimized burfi and control burfi were 0-1.25% percent respectively. The crude fiber content is significant optimized burfi higher than control sample.

Table 4: Result of crude fiber in quinoa burfi

Sample	Control	T_1	T_2
Crude fiber	**0%**	**0%**	**1.25%**

Calcium

The calcium of optimized burfi and control burfi were 571 and 520 mg, respectively. The calcium content a significant control sample higher than optimized sample.

Table 5: Result of calcium in quinoa burfi

Sample	Control	T_1	T_2
Calcium	**571mg**	**581.482mg**	**502mg**

pH

The pH of optimized burfi and control burfi were 7.99-8.03 pH respectively. The PH a significant optimized sample higher than control sample.

Table 6: Result of pH in quinoa burfi.

Sample	Control	T_1	T_2
Ph	**7.99**	**7.88**	**8.03**

Phytochemical analysis of burfi

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The phytochemical analysis showed burfi contain some secondary metabolism. The table shows the presence (+) and absence of (-) of phytochemical constituents in the tested sample of quinoa burfi. The burfi shows that the positive result of control sample quinone and negative result tannin, flavonoid, phenol, alkaloids, anthocyanin/betacyanin, and T_2 sample show that the positive result tannin, flavonoid, phenol, quinones, alkaloids, anthocyanin/betacyanin.

Table 7: Phytochemical Analysis of Quinoa Burfi

Testing	CONTROL	Result T_1	Result T_2
TANNIN	-	+	+
FLAVONOID	-	+	+
PHENOL	-	+	+
QUINONES	+	+	+
ALKOLOIDS	-	+	+
ANTHOCYNIN/BETACYNIN	-	+	+

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COLOUR ESTIMATION OF BURFI

Table 8 : Colour Estimation of Sugarfree Quinoa Burfi

S.NO.	Test Parameter (s)	Test method used	Result (unit)
1	L (T_0)	X-rite colour Lab	50.45 -
2	a (T_0)	X-rite colour Lab	+ 16.93 -
3	b (T_0)	X-rite colour Lab	+32.93 -
4	L (T_1)	X-rite colour Lab	58.63 -
5	a (T_1)	X-rite colour Lab	+12.58 -
6	b (T_1)	X-rite colour Lab	+36.92 -
7	L (T_2)	X-rite colour Lab	42.69 -
8	a (T_2)	X-rite colour Lab	+19.26 -
9	b (T_2)	X-rite colour Lab	+30.20 -

Shelf-life analysis of burfi

Table 9 – Shelf-life analysis during storage -

Days	0 days			5 days			10 days		
Test	T_0	T_1	T_2	T_0	T_1	T_2	T_0	T_1	T_2
Yeast	0	0	0	0	0	0	3.27×10	3.36×10^2	4.72×10^2

and mold							^{2}		
Coliform	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

The quinoa burfi obtained from khoa, stevia and quinoa seed powder. Check the shelf life of quinoa Barfi. will check shelf life on 0 days. No growth in any Sample at 0 days. Then after 5 days check the shelf life of burfi. Growth does not occur in any sample. Then we check the Shelflife at 10 days. T_0 - 3.27×10^2 , T_1 - 3.36×10^2 ,T_2 - 4.72×10^2. Coliform will be 0.

Antimicrobial activity –

De Man, Rogosa and Sharpe Agar (MRS)

Table 10 – Result of MRS

SAMPLE	24 hr	48 hr
Control	0	8×10^3
T_1	0	2×10^3
T_2	0	1.5×10^4

Violet Red Bile Agar

Table 11- Result of violet red agar

SAMPLE	24 hr	48 hr
Control	1×10^3	$1 .6 \times 10^4$
T_1	1×10^3	8.0×10^4
T_2	4.0×10^3	1×10^3

Yeast / mold (DRBC Agar (Dichloran Rose Bengel Chloramphenicol Agar)

Table 12 – Result of DRBC

SAMPLE	24 hr	48 hr
Control	4×10^4	1.6×10^4
T_1	0	0
T_2	0	4×10^3

ANTIOXIDANT ANALYSIS OF BURFI

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DPPH- DPPH is the most suitable way to determine the antioxidant property of a sample. Because DPPH free radicals are scavenged by antioxidant compound, the colour of the sample change from purple to yellow (Nirmala). Show the graph between concentration (µg) and antioxidant activity (%) of extract.

By using a spectrophotometer, the optical density of a sample and the optical density of the control can be calculated to determine DPPH behavior in a sample. According to, if DPPH value is below 50 µg/ml it has a very strong antioxidant property, if it lies between 50-100 µg/ml has strong antioxidant property and if it is above 150µg/ml it has weak antioxidant property. The antioxidant activity of quinoa burfi at different concentrations (Control, T_1, T_2) was evaluation and the results obtained were illustrated. According to these results, quinoa seed burfi concentration increases up to 43.13 µg. Afterward, the activity of antioxidant was constant.

%DPPH inhibition = AB-AS×100÷AS

Table 13: Result of DPPH-

Sample	Result
Control	20.23µg
T_1	28.36µg
T_2	43.13µg

Table Showing the absorbance value obtained for quinoa seed burfi for DPPH radical scavenging activity.

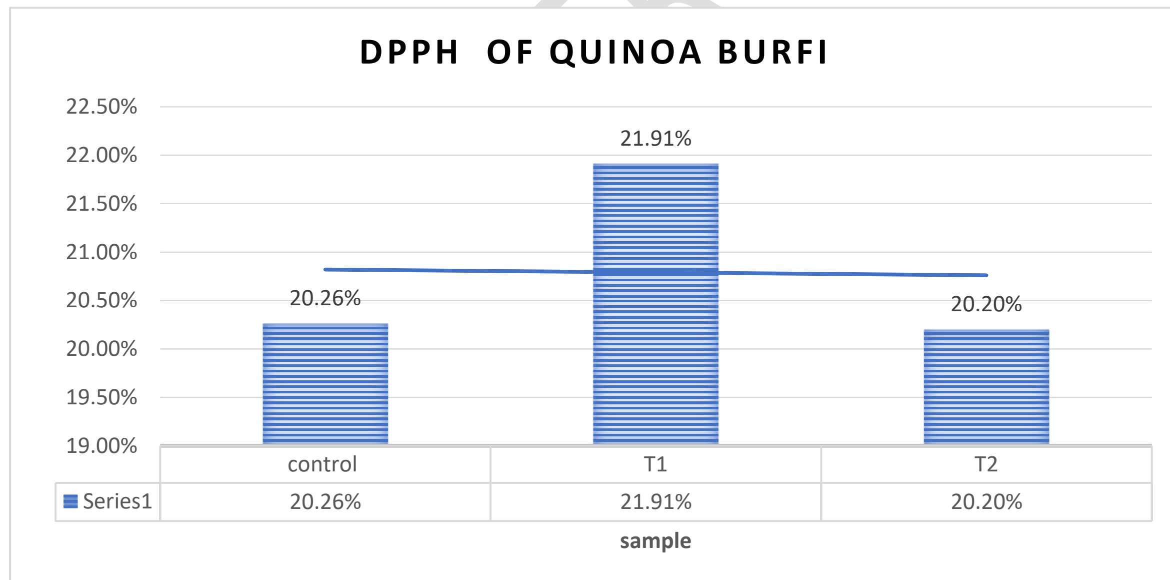

Fig 5: % DPPH activity of control and optimized burfi

5. CONCLUSION

It was concluded from different analysis and experiment burfi was fused with quinoa seed powder and stevia. Quinoa seed have higher measure of protein, fiber, mineral and each of the nine fundamental amino corrosives. It has low glycaemic list which is really great for diabetic individuals. This item contains normal sugar stevia which make item sugar free. Burfi is consumed by wide gathering of populace. This item is ready with the intend to give sustenance to each individual. Anyway, further examination work can be completed on this item to expand its timeframe of realistic usability with further developed surface properties by further developing assembling process or by utilizing novel

bundling. The overall conclusion of the study is that the proximate analysis of optimized quinoa burfi. Carbohydrate, calcium, crude fiber, calcium, pH, total Titrable acidity check in quinoa burfi. Phytochemical analysis of optimized quinoa burfi. optimized quinoa burfi has good antioxidant activity. Antimicrobial analysis of optimized quinoa burfi. Shelflife analysis of optimized burfi .

COMPETING INTERESTS DISCLAIMER:

Authors have declared that no competing interests exist. The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

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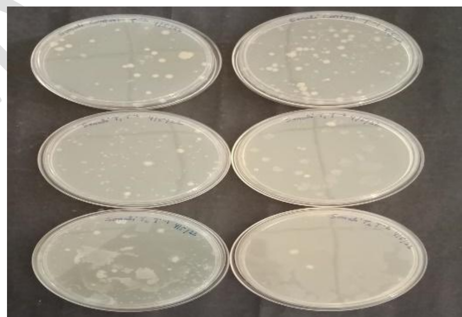
SHELFLIFE ANALYSIS

Fig : 6 Yeast and mold plates



Antimicrobial activity

Fig 7 : 1 MRS plates

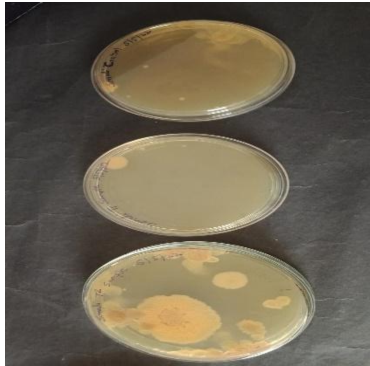


Fig 8 : 2 Yeast / mold (DRBC Agar (Dichloran Rose Bengel Chloramphenicol Agar)

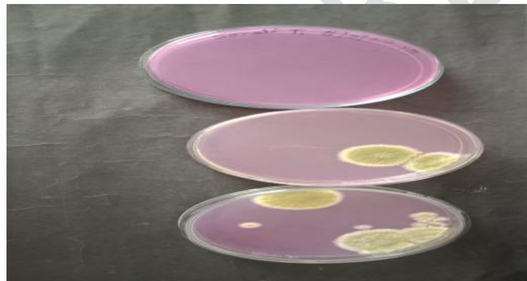
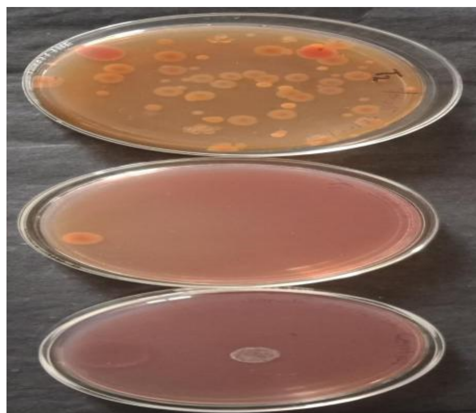


Fig 9:3 Violet Red Bile Agar



Phytochemical analysis

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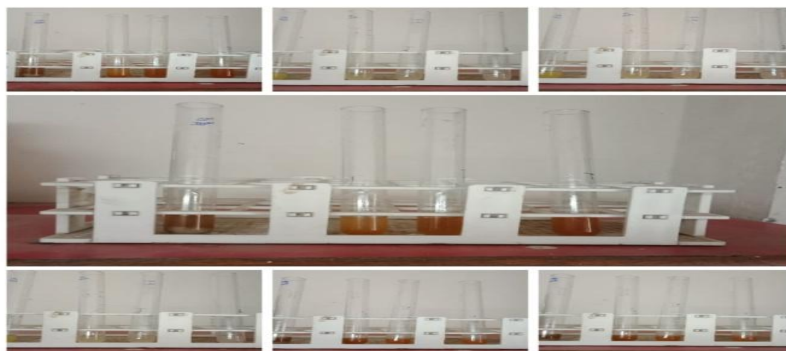
Fig 10 : 1 presence of phytochemical



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