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Elaboration of a peanut and nut based yogurts

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INTRODUCTION & AIM

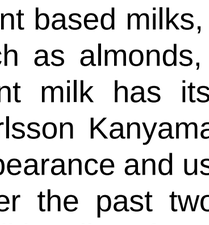
Plant based milks, also called animal milk substitutes is produced from different plants such as almonds, soy, rice, oats, peanuts, walnuts and many others. Each type of plant milk has its own nutritional and taste characteristics (Tangyu et al. 2019; Carlsson Kanyama, 2021). They are very similar to animal milk in terms of texture, appearance and use.

Over the past two decades, the consumption of non-dairy plant-based beverages traditionally referred to as “plant milks” has increased significantly due to health and environmental concerns, lactose intolerance, and flexitarian choices (Munekata et al., 2020).

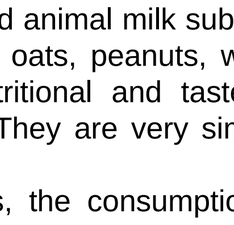
The objective of this study is to carry out a test of manufacturing a drinking yogurt according to two different recipes: a yogurt made from a mixture of 50% walnut milk and 50% peanut milk (YWP), while a second is prepared from 50% walnut milk and 50% roasted peanut milk (YWPr), elaborated under the same conditions; then, compare the physicochemical, microbiological and sensory parameters of the products

METHOD

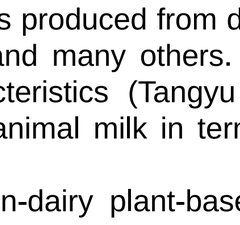
Elaboration of the plant based product



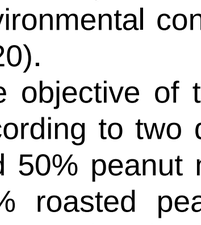
50ml of peanut milk and 50ml walnut milk



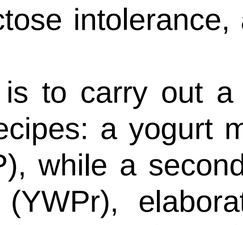
Pasteurisation 94°C/5min



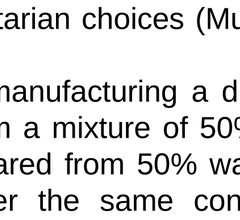
Cooling and Sugar addition



Inoculation of the ferments at 34-35^{0}C



Incubation at 44^{0}C / 6-7h



Cooling at 5 °C

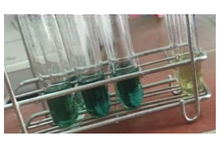
Physicochemical analyses

Different physicochemical analyses were carried out such as :

Acidity No. 981.81 of AOAC (2006).

pH AOAC 947.05 (2006).

Peroxide index



Total sugar using the anthrone method

Total proteins with the Lowry method

Microbiological analyses

Different microbiological analyses were carried according to the algerian jofficial journal (JORA, 2017) related to the analysis of milk and dairy products.

Germs	Medium	T° and Time of incubation
Fecal coliforms	VRBL	44°C/24h
Streptococcus thermophilus	M17	44°C/48h
Lactobacillus bulgaricus	MRS	44°C/48h
Molds and yeast	YCG	25°C/2 to 5 days

Sensory analyses

Yogurt samples were analyzed for appearance/color, texture/mouth feel, flavour and overall acceptability. Three samples coded A (YWPr),B (YWP) and C (yogurt with cow milk) were given to analyse for 12 jurors.

RESULTS & DISCUSSION

The results of all the physicochemical analyses (pH, total sugar, total protein contents, acidity and peroxide index) are summerised in the following table

Drinking yogurt (YWP)

	day1	day7	day15
Total sugar (mg)	12,60±1,72	13,53±0,11	19,40±0,07
Total proteins	14,58±4,63	/	/
PH	4,43±0,01	4,30±0,00	4,26±0,01
Acidity (mg of KOH/g)	5,63±0,21	5,69±0,08	6,31±0,01
Peroxide index(meq O2/kg)	20,01±0,43	/	20,34±0,31
Drinking yogurt (YWPr)			
Total sugar (mg)	16,30±1,24	16,94±0,55	19,63±0,85
Total proteins	62,80±3,79	/	/
PH	4,47±0,00	4,27±0,00	4,26±0,01
acidity (mg of KOH/g)	6,01±0,45	6,27±0,17	6,44±0,09
Peroxide index(meq O2/kg)	16,76±0,08	/	18,53±0,11

Total sugar content increases from 12,60±1,72 (day one) to 19,40±0,07 (day 15) for the yogurt YWP same for the other sample this is probably due to lactic bacteria that hydrolise the polyosides found in the peanut and walnut milk. Also total sugar content in the yogurt manufactured with walnut and peanut milk (YWP) is superior to the total one found in the yogurt manufactured with walnut and roasted peanut milk. (YWPr). The heat could be related to the hydrolysis of complexe sugar found in the crops.

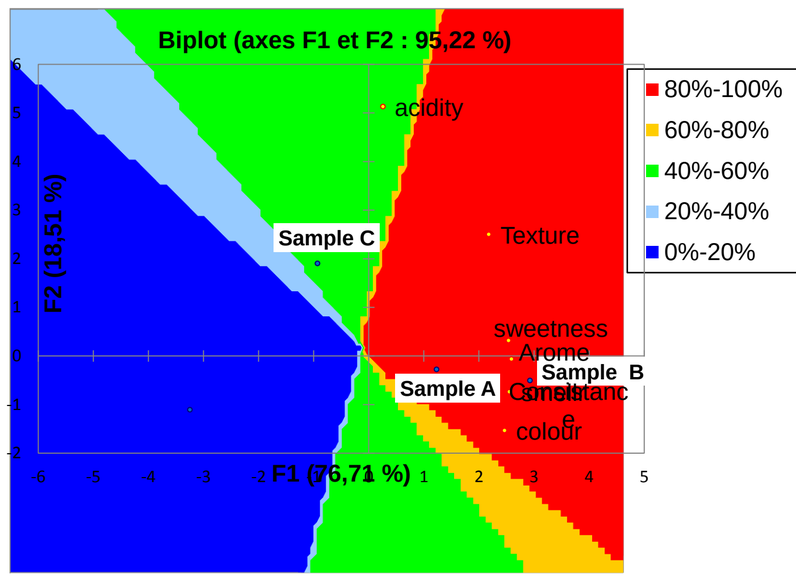
pH decreases and acidity increases in both type of yogurt due to the fermentation of glucose and its transformation to lactic acid and also the release of free fatty acids.

Peroxide index is stable during fifteen days of storage, this indicates a non oxidation of fatty acids and a respect of good manufacturing.

Microbiological analysis shows that all indesirable bacteria and molds are absent in the product. Also, lactic acid bacteria are present an viable in the product as it is for an ordinary yogurt.

Level curve

Sensory analysis in the level curve shows the appreciation of the three samples A,B and C. texture, colour, sweetness and textrure are appreciated at rate between 80 and 100% while the acidity is at only 40 to 60%. Samples A and B are more appreciated by the jurors then sample C.



CONCLUSION

This study carried out on manufacturing yogurt from peanut and walnut milk showed the following results :

- Both products YWP and YWPr exhibit a good physicochemical values and are in adequation with some standards for dairy products.
- Microbiological analyses are satisfaying and don’t show harm to the cosumers.
- Sensory analysis shows that yogurt made with walnut and roasted peanut milk is the favorite product with a 100% satisfactory rate among the jurors.

FUTURE WORK / REFERENCES

This study could be better if we use other organic ingredients such as date sirups instead of white sugar.

Add other fruits such as banana to enhance the flavor of the product.