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RESEARCH ARTICLE

DETERMINING THE CHANGES IN FATTY ACID PROFILE OF UNSATURATED COOKING OILS AFTER REPEATED HEATING

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ABSTRACT

In the present study "*Determining the change in fatty acid profile of unsaturated cooking oils after repeated heating"* an approach is made to determine fatty acid profile of the selected cooking oils for change in the same after repeated heating. A total number of 6 samples were selected for the study, including mustard, soybean and olive oil. Out of these 3 different oils were heated for one time and remaining 3 of the same type for five times each, the prepared samples were sent for laboratory testing which was done using the spectrophotometer method. Further the comparison was done to note the difference between one times heated and five times heated edible oils. The results revealed that among all the oils tested, mustard oil when heated five times, showed increase in total fat and MUFA by 0.10gm and 4.95gm respectively as compared to one time heated. Similarly, each cooking oil showed variation in fatty acid profile after reheating.

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INTRODUCTION

Cooking oils constitute an important component of food in Indian households. It is plant, animal, or synthetic fat used in frying, baking, and other types of cooking. It is also used in food preparation and flavouring not involving heat, such as salad dressings and bread dips, and in this sense might be more accurately termed edible oil. Oils are majorly composed of fatty acids, triglycerides, cholesterol, in addition with some other nutrients. When oils are heated to their smoke point, their chemical composition begins to change as the oils break down. The amounts of antioxidants found in the oils can decrease, removing one of the oil's positive health benefits. There are a variety of cooking oils used all over India. Thus it is important to choose them wisely according to their properties.

MATERIALS AND METHODS

Laboratory testing of the edible oil samples was done to compare the changes in the fatty acid profile of oils after heating. Acid value and free fatty acid was determined by using the reagents Ethyl Alcohol and Indicator solution.

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RESULTS AND DISCUSSION

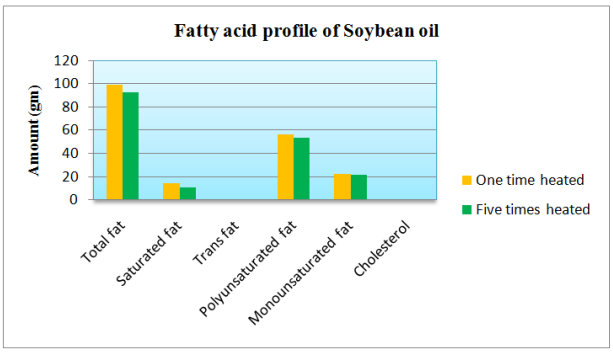

Figure 1.

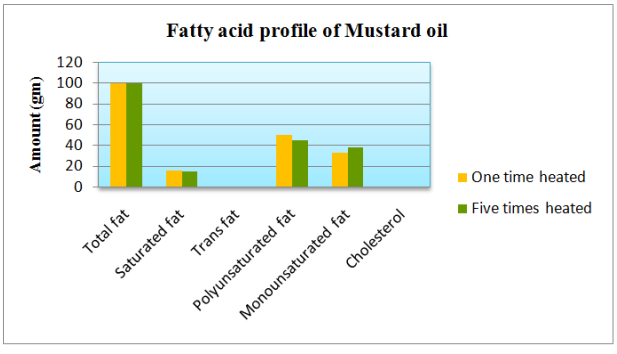

Figure 2.

Table 1. Changes in Fatty acid profile of Unsaturated cooking oils (n=6)

S.No.	Parameters	Mustard oil		Olive oil		Soybean Oil	
		Amount (one time heated)	Amount (Five times heated)	Amount (one time heated)	Amount (Five times heated)	Amount (one time heated)	Amount (Five times heated)
1.	Total fat	99.80 gm	99.90 gm	99.30 gm	96.65 gm	98.90 gm	92.79 gm
2.	Saturated fat	16.30 gm	15.20 gm	13.70 gm	10.38 gm	14.39 gm	10.89 gm
3.	Trans fat	-	-	0.0 gm	0.0 gm	0.56 gm	0.0 gm
4.	PUFA	50.12 gm	45.32 gm	10.12 gm	8.36 gm	56.70 gm	53.65 gm
5.	MUFA	33.17 gm	38.12 gm	73.25 gm	68.35 gm	22.65 gm	21.78 gm
6.	Cholesterol	-	-	0.0 mg	0.0 mg	0.0 mg	0.0 mg

Table no.1 reveals the fatty acid profile of Unsaturated cooking oils which are heated one time and five times. It was found that amount of total fat, saturated fat, trans fat, PUFA, MUFA and cholesterol in five times heated oils as compared to one time heated varied to some extent.

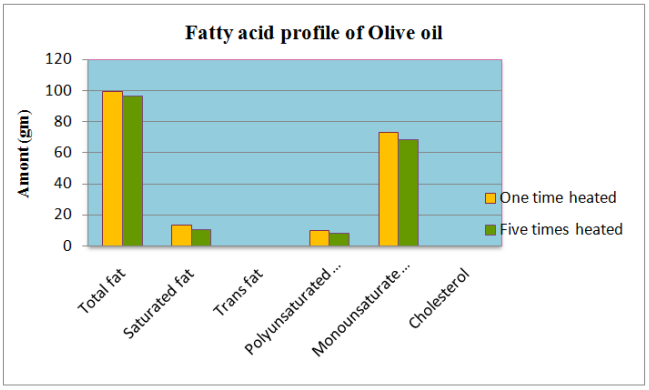

Figure 3.

Conclusion

From the above findings it can be said that there is always a notable change in the fatty acid composition of the cooking oils after repeated heating exposure. This alters the overall composition of the oil and thus it is avoidable to re- heat the oils for several times. It is important to develop healthy habits in reference to cooking oils as they form a major component of the diet. Majority of the recipes are prepared with a little or more quantity of oil, thus it is important to chose the right oil for maintaining a good health status and also using it in a right manner.

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