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INVESTIGATING OF RHEOLOGICAL PROPERTIES OF OIL EXTRACTED FROM THREE VARIETIES OF OLIVE IN THE PROCESS OF BLEACHING

The Investigation of Stigmasta Diene in Three Varieties of Iranian Olive Oil

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Abstract: *Olive oil is one of the most vegetable oils in the diet. It contains lots of functional compounds such as sterols, tocopherols etc. B-sitosterol has the most amounts in olive oil. Since it effects in lowering cholesterol levels, therefore its maintenance has great importance. B-sitosterol dehydrates in olive oil bleaching and deodorizing and transform to stigmasta 3,5 diene. Its presence in oil indicates olive oil fraud by blending it with other refined oils. In this study 3 varieties of Iranian olive including Zard , Roghany ,Phishomi were selected of two province ,Gilan (Roudbar region) and Fars (Darab and Fasa regions). In this stages samples were neutralized and treated by adding 1.5% Tansyl activated bleached soil and vacuum condition 9mmHg in bleaching process under temperatures of 40, 50,60,70,80. Results were analyzed by SPSS and Pearson*

correlation and linear regression tests. All samples were displayed an impalpable increasing of stigmasta 3,5 diene up to 80°c.

Key Terms*: Iranian olive oil, Stigmasta 3,5 diece , bleaching*

Introduction

Oil of seeds and oily fruits are mostly extracted from conditioned seeds by the solution of hexane which is obtained after oil-extracting while evaporating solution of raw oil. Raw oil has compounds such as pigment of phospholipids and free fat acid and these desirable and delicious compounds must be removed. In the process of filtration rare compounds decrease remarkably. Rare esterifitated compounds such as steroids ester waxes and teriterpenoic alcohols show more limited decrease. (Chu ,1990).These materials must be removed from triglycerides of edible oil in the process of filtration. Since there are not many studies about rheological behavior of olive oil in temperatures of bleaching and totally the filtration of olive oil, in this research rheological properties of olive oil in the process of bleaching have been investigated.

Materials and Methods

Olive Sampling

In this study provinces of Gilan (Rudbar) and Fars (Fasa and Darab) were selected among the counties in where varieties and cultivars of olive are produced. In Rudbar cultivars Yellow, oily and Phishomi were sampled and in Fars 2 varieties Mari and Shenge were sampled in the season of harvesting olive meaning November.

Extracting Oil

In selecting samples the level of ripeness and their smoothness in terms of size were considered important. Gardens of these towns were sampled and the gathered samples were transferred immediately to the laboratory for extracting oil. About 60 kilograms fruit were picked from different varieties for extracting their oil during less than 24 hours. In this direction the samples of healthy fruits were used. These olives were crashed by a metal mill and then they were placed in a mixer model Ribbon Type Mixer Model Single Shaft with the speed 20 revolutions in a minute for 60 minute. Then they were centrifuged in 7000 revolution in minute for 20 minutes. Obtained oil was kept in mat glass bottles in a cold place under 4 centigrade's.

Neutralizing Process

Adding soda is done drop by drop in ambient temperature simultaneous with mixing oil by magnet Erlen Bokhner which is equipped to thermometer. Mixing

is done with 300 rotations per minute for 15 minutes. Then under the vacuum conditions 9 mmHg the speed of mixing reaches minimum and heating reaches 65 centigrade's so that emulation is broken and soap is extracted easily by filtration. When the particles of soap precipitate heating and mixing are stopped and oil becomes cold gradually during several hours so that it reaches 4 centigrade's. Neutralized oil was extracted from the particles of soap by centrifuge with the speed 4000g for 20 minutes. Then oil is washed with adding water 95 centigrade's during mixing 10 minutes with the speed 500 rpm. This washing was repeated 4 times more so that water obtained is not basic. Drying the obtained oil was done by shuff balloon for 20 minutes in 100 centigrade's and under vacuum and then it became cold under vacuum.

Bleaching

1.5% of the weight of oil of bleacher soil is added to activate tonsil with acid inside two-mouth balloon. Oil is mixed under vacuum conditions 9 mmHg while mixing with 50 rpm by magnet for 20 minutes in temperatures 40, 50, 60, 70 and 80. Then oil is filtered by filter paper wattman No. 41 for 3 times so that oil.

Stigmasta diene evaluation

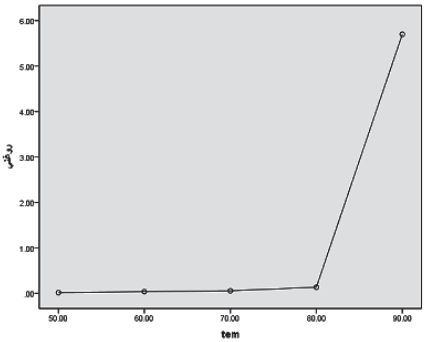
20 g of sample oil with 20µg of internal standard solution (3, 5 cholesta diene) added to 75 ml of Potassium Hydroxide and heated for 30 min in return condenser, then let it cooled and shook 30 seconds and permitted to separate its phases, Add a little ethanol and carry the aqua phase to the second separator funnel, wash with 100ml hexane. The resulted mixture washed 3 times by ethanol/water mixture to reach neutral pH. Hydrocarbon compounds will separate base on national Iran standard N.O. 9404. However GC Temperatures programs and its conditions as follow:

- The temperature of injection is 300 ˚C
- The temperature of detector is 320 ˚C
- 1 µl of injected solution
- Oven temperature program; initial Temperature 235 ˚C;6min, temperature ingredient 2min to reach 285˚C.

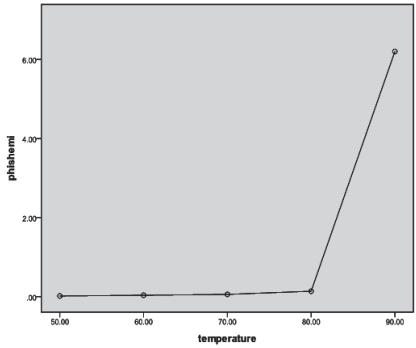
Carrier gas is helium with 120Kpas and 85 Kpas respectively.

Results and discussion

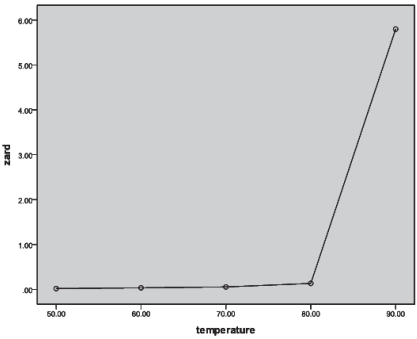
Results revealed that all samples follow a gentle increasing in Stigmasta 3,5 diene production up to 80 ˚C. Since the amount of this compound should not increased more than 0.15 mg/kg, results emphasize on 80˚C as an optimum temperature (figure 1). These results are in agreement with Bonveh et al.(2002). Regarding 3 first temperature showed significant difference in Pearson Correlation at ($p>0.05$), but 4 temprature 40,50,60 and 70 only meaningful in $p>0.1$ (table1)



(a)roghani



b(phishomi)



c(zard)

Figure 1. Stigamsta 3,5 diene Vs Temperatures in bleaching treatment of 3 varieties a, b and c.

Table 1. Pearson Correlation of 4 temperatures of bleaching treatments.

		phishomi	Tem	zard	roghani
phishomi	Pearson Correlation	1	0934	**1.000	**1.000
	Sig. (2-tailed)		0.066	0.000	0.000
	N	4	4	4	4
Tem	Pearson Correlation	0.934	1	0.924	0.935
	Sig. (2-tailed)	0.066		0.076	0.065
	N	4	4	4	4
zard	Pearson Correlation	**1.000	0.924	1	**0.999
	Sig. (2-tailed)	0.000	0.076		0.001
	N	4	4	4	4
roghani	Pearson Correlation	**1.000	0.935	**0.999	1
	Sig. (2-tailed)	0.000	0.065	0.001	
	N	4	4	4	4

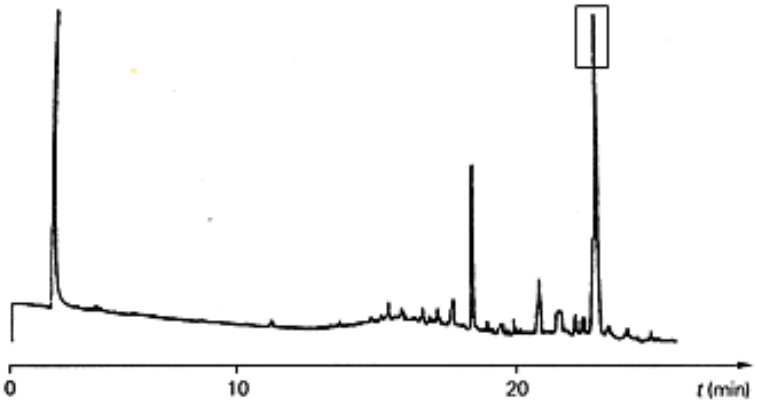


Figure 1. stigmasta 3,5 diene peak related to Roghani Variety at 80 ˚C.

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COXIELLA BURNETII IN RAW MILK AND CHEESE IN IRAN

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Abstract: *Q fever is a zoonotic disease caused by the rickettsial organism Coxiella burnetii. Cattle, sheep and goats are the main sources of human infection. Infected animals shed highly stable bacteria in urine, faces, milk and through placental and birth fluids. Inhalation of aerosolized organisms or ingestion of raw milk or fresh dairy products has been reported in human and animals. This study was conducted to determine the prevalence rate of C. burentii in raw cow milk, raw sheep milk, traditional cheese and ice cream produced in Isfahan and Shahrekord, Iran. A total of 200 samples including 50 cattle and sheep milk samples and 50 traditional cheese & ice cream were collected and tested for C. burnetii using a nested PCR assay. In*