

INTRODUCTION

Increased consumption of saturated fats, most prevalent in milk, has been shown to be associated with an increased risk of obesity, atherosclerosis, coronary heart disease, elevated blood pressure and tissue injury diseases. One of the possibilities related to the improvement of fatty acid composition in dairy products such as cheese is certainly the partial or complete replacement of milk with fat vegetable oils and fats rich in ω -6 and ω -3 fatty acids. In order to prevent mentioned health problems and to provide novelties on the market of functional food, production of reduced-fat and low-fat cheeses is in a phase of constant growth. Vegetable oils are a source of important bioactive substances for the human body, such as liposoluble vitamins, tocopherols, phytosterols, lecithins, pigments etc. The most common cheese analogues present at the market in our country are those which contain palm and coconut oil as a fatty phase.

This study aims to determine the differences in physico-chemical characteristics (pH value, a_w value, contents of fat, total protein, dry matter, ash and carbohydrates) and in the content of conjugated dienes and trienes, as products obtained from primary and secondary lipid oxidation processes, in cheese analogues based on palm and coconut oil.



Table 1. Physico-chemical characteristics and composition of cheese analogues based on palm and coconut oil

Physico-chemical characteristics	Cheese analogue based on palm oil	Cheese analogue based on coconut oil
pH	6.03±0.00	3.74±0.15
A_w	0.95±0.00	0.96±0.00
Fat content (%)	20.15±0.75	24.97±0.00
Total protein content (%)	1.53±0.00	n.d.
Dry matter content (%)	46.80±0.26	37.83±0.24
Ash content (%)	3.09±0.01	1.94±0.01
Carbohydrate content (%)	22.03±0.00	10.92±0.00

Means (n=2) ±standard deviation with different letters in the same column are significantly different (P<0.05)

MATERIAL AND METHODS

Cheese analogues based on palm and coconut oil were purchased from a local food market.

Physico-chemical characteristics (pH value, a_w value, fat, total protein, ash and carbohydrate contents) as well as contents of conjugated dienes and trienes were examined in order to determine the influence of cheese analogue composition on their oxidative stability.

RESULTS AND DISCUSSION

Cheese analogues based on palm and coconut oil differed from each other in pH values (6.03 and 3.74, respectively). Coconut oil-based cheese analogue had higher content of fat in comparison with palm oil-based cheese analogue, which is characterized with higher contents of dry matter, total proteins, the ash and carbohydrate content. When it comes to the content of conjugated dienes determined in these samples, there was an insignificant difference between them. However, the palm-oil based cheese analogue showed a significantly higher content of conjugated trienes (0.51) compared to the coconut oil-based one (0.05)

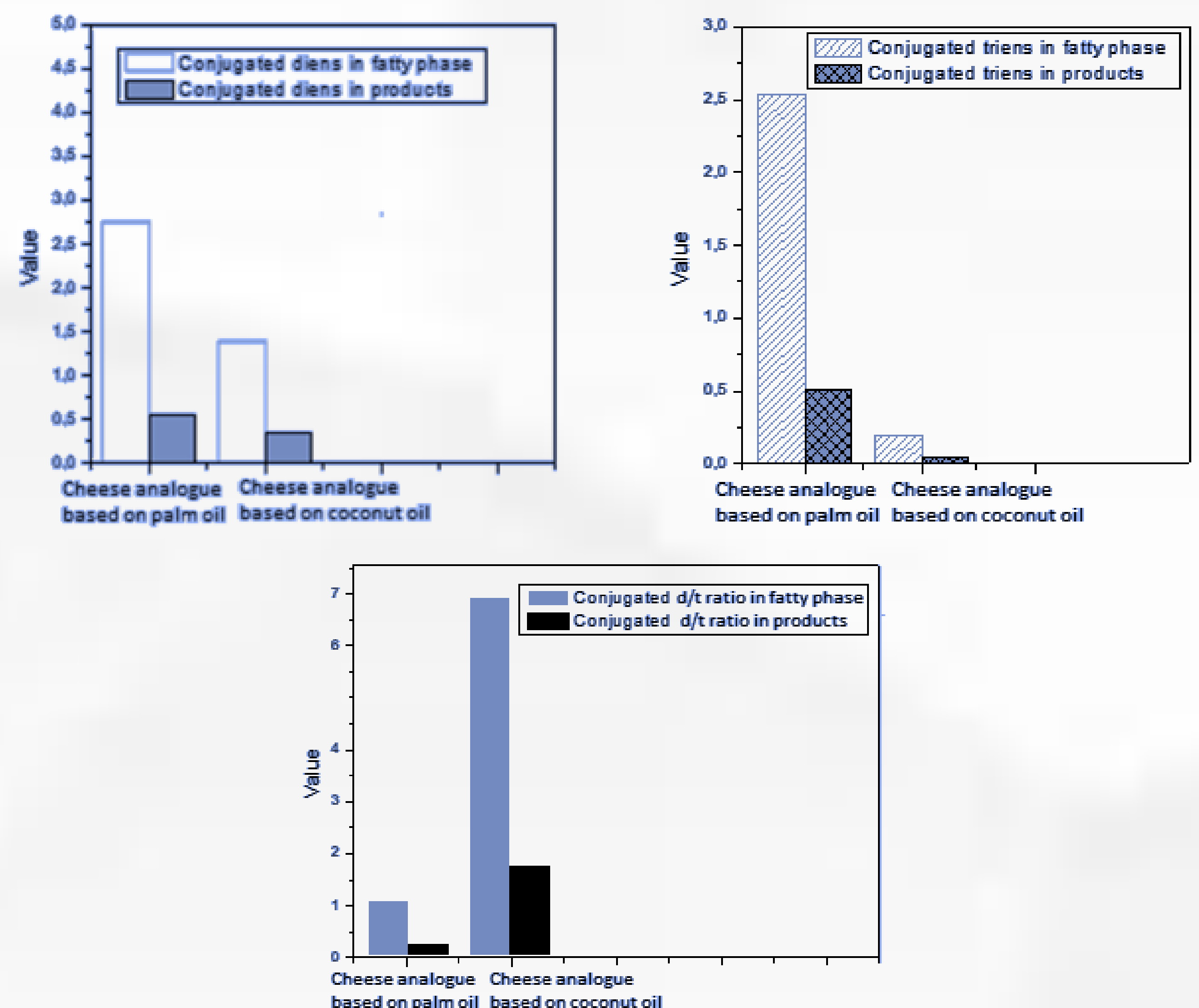


Figure 1. a) content of conjugated dienes; b) content of conjugated trienes; c) conjugated diene/triene ratio in cheese analogues based on palm and coconut oil

CONCLUSION

By comparing physico-chemical characteristics of cheese analogues based on palm and coconut oil, it can be concluded that there are differences between them in terms of pH value, fat, total protein, dry matter and carbohydrate contents, which is closely related to the differences in their formulations and the oils used as a fatty phase. The increased content of conjugated dienes and trienes in the palm oil-based cheese analogue indicates a higher concentration of primary and secondary lipid oxidation products, as a consequence of higher content of unsaturated fatty acids.