



UNIVERSITY OF LIFE SCIENCES
"KING MIHAI I" FROM Timisoara
**Multidisciplinary Conference on
Sustainable Development**
30-31 May 2024



Determination of total fatty acid content of a milk dessert with the addition of passion fruit and lime

Sara Simeunović¹, Aleksandra Tasić², Ivan Pavlović², Nemanja Zdravković²

¹Sara Simeunović, Faculty of Agriculture, University of Belgrade, 11080 – Belgrade, Nemanjina 6, Serbia

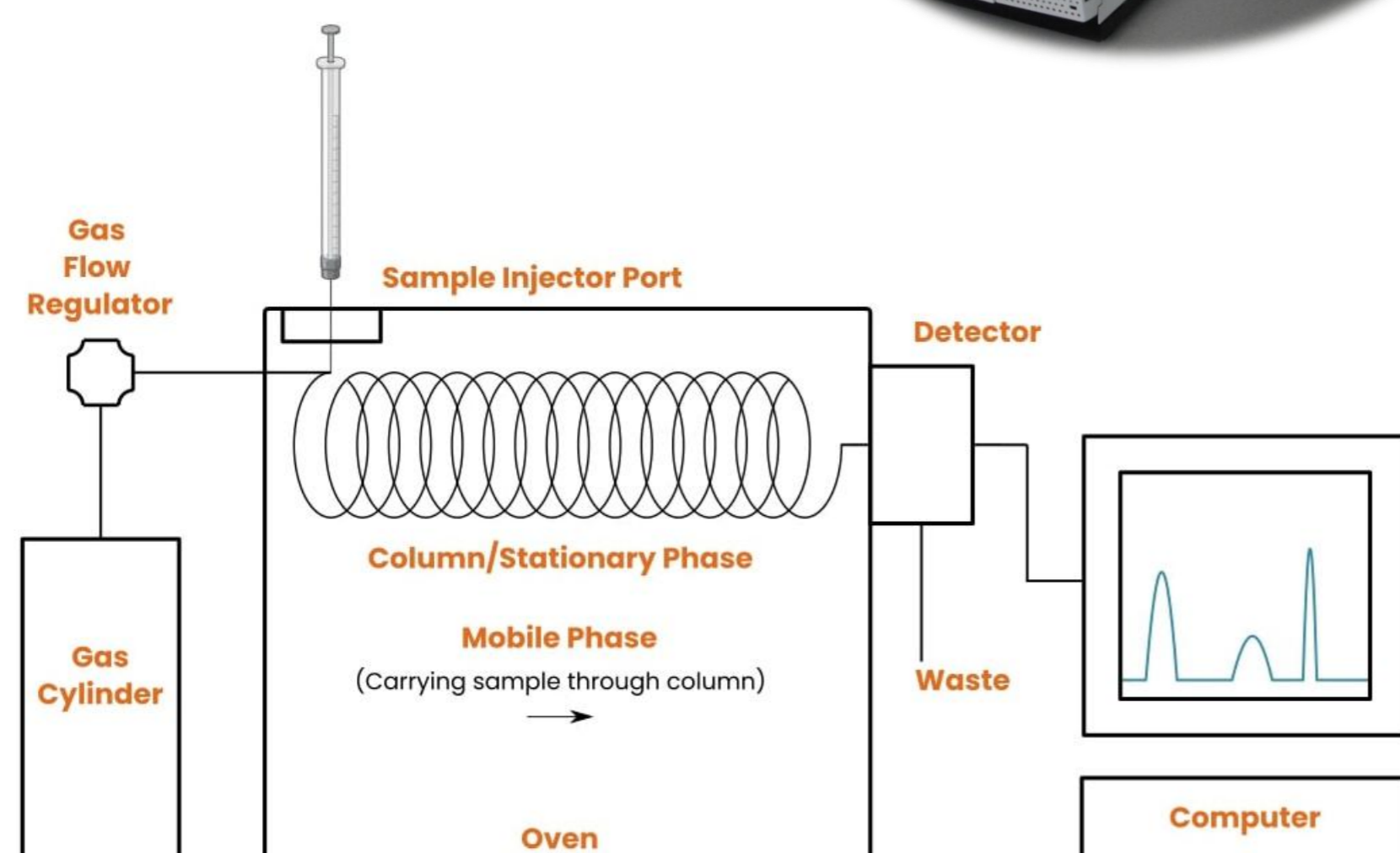
²Dr Aleksandra Tasić, Dr Ivan Pavlović, Dr Nemanja Zdravković, Scientific Institute of Veterinary Medicine of Serbia, 11000 – Belgrade, Janisa Janulisa 14, Serbia

Abstract: Dairy products should occupy a certain share in the daily human diet. Due to the rich nutritional content, *i.e.* the possession of certain amounts of proteins, lipids and minerals that definitely enrich this type of food, consuming them is of great importance for the normal development of metabolic processes. Special attention should be focused on the fatty acids, when it comes to dairy products. Depending on whether they are saturated or unsaturated, whether they are *cis* or *trans* configuration, we can expect a series of negative effects (diseases of the heart and cardiovascular system), but also many benefits (prevention of the aforementioned diseases). That is why it is important to know the proportion of trans fatty acids that are undesirable in the diet, as well as the desirable ratio of omega-3 and omega-6 polyunsaturated fatty acids, etc. Of the omega-3 fatty acids, the presence of alpha-linolenic acid (0.88%) and *cis* – 5, 8, 11, 14, 17 – eicosapentaenoic acid (0.43%) and *cis* – 4, 7, 10, 13, 16, 19 – docosahexaenoic acid (0.86%) was determined. A high percentage of oleic acid (23.13%) was also determined. The values of the obtained health indices, namely atherogenic and thrombogenic index, were 1.94 and 2.17 respectively.

- **Introduction** - Milk products contain fatty acids, beside proteins, lipids, minerals, etc. The main importance is It is necessary to distinguish between fatty acids that are desirable in the daily diet and those that have negative effects on human health.

- **Material and method**

Separation and quantification of the fatty acid methyl esters (FAME) were carried out using a gas chromatograph.



- **Results and discussions**

Component (methyl esters)	Abbreviation	Quantity (%)
Butyric acid	C4:0	0.8 ± 0.04
Caproic acid	C6:0	0.77 ± 0.05
Caprylic acid	C8:0	0.60 ± 0.10
Capric acid	C10:0	1.76 ± 0.20
Lauric acid	C12:0	2.65 ± 0.15
Myristic acid	C14:0	10.12 ± 0.59
Pentadecanoic acid	C15:0	0.88 ± 0.12
Palmitic acid	C16:0	32.99 ± 3.25
Heptadecanoic acid	C17:0	0.42 ± 0.12
Stearic acid	C18:0	11.91 ± 2.14
Arachidic acid	C20:0	0.10 ± 0.02

Component (methyl esters)	Abbreviation	Quantity (%)
Linoleic acid	C18:2 cis (n6)	2.24 ± 0.15
Linoleic acid	C18:2 trans (n6)	0.62 ± 0.15
α-Linolenic acid	C18:3n3	0.28 ± 0.10
cis-11,14 - Eicosadienoic acid	C20:2	1.68 ± 0.18
cis-5,8,11,14,17- Eicosapentaenoic acid	C20:5n3 (EPA)	0.03 ± 0.10
cis-13,16 - Docosadienoic acid	C22:2 (n-6)	4.59 ± 0.26

Component (methyl esters)	Abbreviation	Quantity (%)
Myristoleic acid	C14:1	0.68 ± 0.03
cis-10- Pentadecenoic acid	C15:1	0.14 ± 0.04
Palmitoleic acid	C16:1	1.44 ± 0.10
cis-10-Heptadecanoic acid	C17:1	0.06 ± 0.08
Oleic acid	C18:1 cis(n9)	23.13 ± 2.68
Elaic acid	C18:1 trans(n9)	2.25 ± 0.22

ESFA	62.86
SMUFA	27.70
SPUFA	9.44
Total n-6	7.45
Total n-3	0.31
Total n-9	25.38
n-6/n-3	24.03
PUFA/SFA	0.15
LA/ALA	2.86
EPA + DHA	0.03
AI	2.147
TI	2.967
HH	0.662

- **Conclusions** - No matter how much we are chasing fatty acids with all good benefits, consuming larger amounts of dairy food, especially desserts can cause an opposite effects. For the normal functioning of biochemical processes, balanced diet is of great importance, as well as minimal intake of saturated fatty acids and also trans fatty acids.

Acknowledgement: This research was supported by the Ministry of Education, Science and Technological Development of the Republic of Serbia, grant number: 451 – 03 – 47/2023 – 01/200030