

FATTY ACIDS COMPOSITION AND TOTAL FAT CONTENT IN TRADITIONAL FOODS FROM BLACK SEA AREA COUNTRIES

Tânia Gonçalves Albuquerque^{a,b}, Ana Sanches-Silva^a, Paul Finglas^c, Filippo D'Antuono^d, Antonia Trichopoulou^{e,f}, Iordanka Alexieva^g, Nadiya Boyko^h, Carmen Costeaⁱ, Katerina Fedosova^j, Dmitry Karpenko^k, Zaza Kilasonia^l, Bike Koçaoglu^m, Helena Soares Costa^a

^a Department of Food and Nutrition, National Institute of Health Dr. Ricardo Jorge, I.P., Lisbon, Portugal; ^b REQUIMTE/Faculdade de Farmácia da Universidade do Porto, Porto, Portugal; ^c Institute of Food Research, Norwich, UK; ^d Food Science University Campus, University of Bologna, Cesena, Italy; ^e Department of Hygiene, Epidemiology & Medical Statistics, Medical School, National and Kapodistrian University of Athens, Athens, Greece; ^f Hellenic Health Foundation, Athens, Greece; ^g University of Food Technologies, Plovdiv, Bulgaria; ^h UzhNU (Uzhhorod National University), Ukraine; ⁱ ASE Bucharest, Romania; ^j Department of Nutrition, Odessa National Academy of Food Technologies, Odessa, Ukraine; ^k State Educational Institution of the High Professional Education "Moscow State University of Food Productions", Moscow, Russian Federation; ^l Elkana, Biological Farming Association, Tbilisi, Georgia; ^m T C Yeditepe University, Istanbul, Turkey

E-mail: tania.albuquerque@insa.min-saude.pt



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UNIVERSIDADE DO PORTO

INTRODUCTION

Traditional foods from 6 Black Sea Area Countries (Bulgaria, Georgia, Romania, Russian Federation, Turkey and Ukraine) were prioritized within the frame of the European Project BaSeFood (Sustainable Exploitation of Bioactive Components Black Sea Area traditional foods) [1]. One of the aims within BaSeFood project was to produce an overview of the nutritional value of each traditional food and compare it among the categorized food groups.

OBJECTIVES

The overall objective of this study was to determine the total fat content and fatty acids (FA) composition among 33 traditional foods (Fig. 1) from six Black Sea Area countries (BSAC).

SELECTED TRADITIONAL FOODS



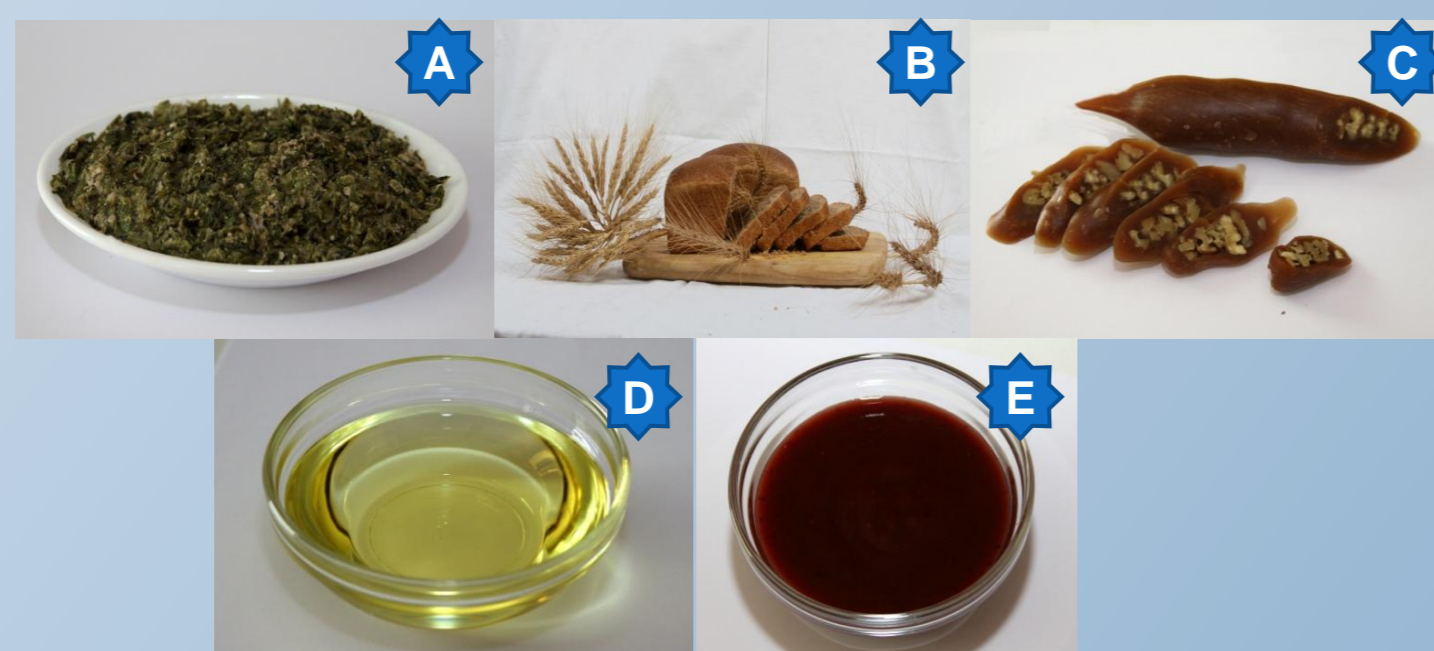
BULGARIA

(A) Baked layers of pastry stuffed with pumpkin; (B) Halva; (C) Millet ale; (D) Mursal tea; (E) Rodopian dried beans; (F) Rose jam



GEORGIA

(A) Nettles with walnut; (B) Tsiteli doli bread; (C) Churchkhela; (D) Flax oil; (E) Wild plum sauce.



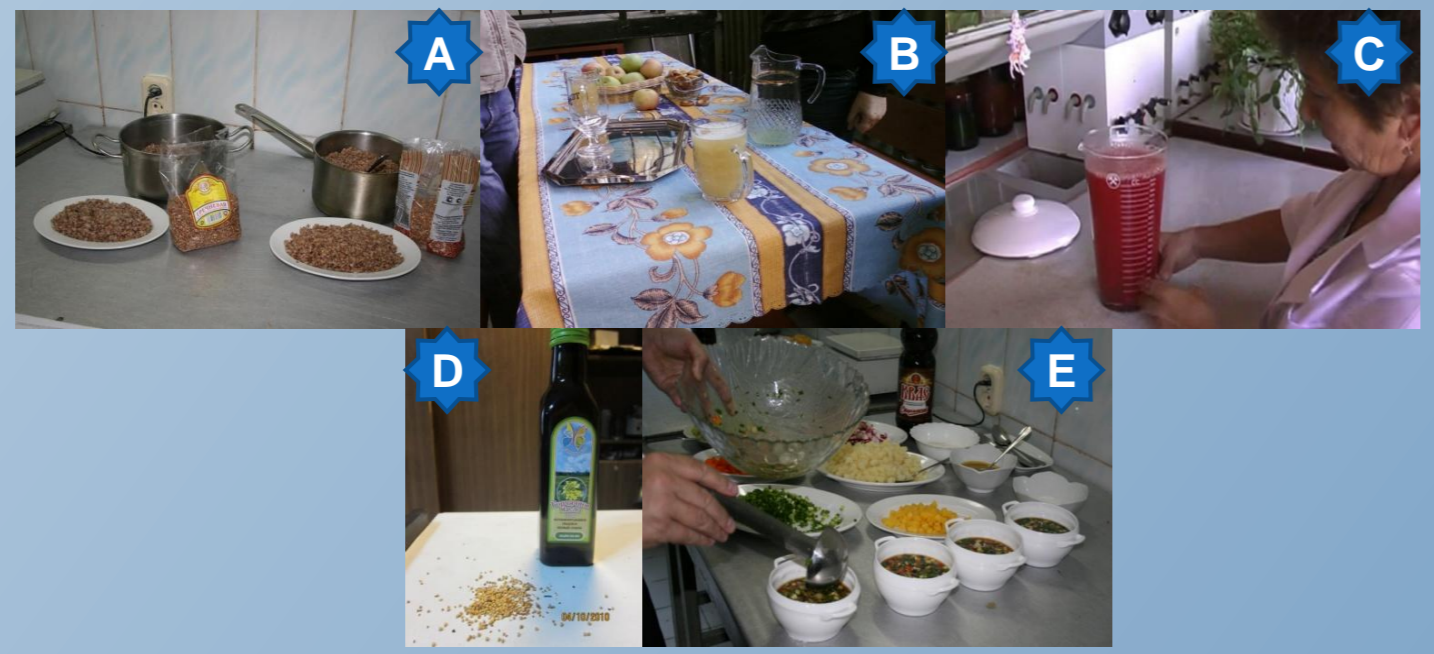
ROMANIA

(A) Cornmeal mush; (B) Nettle sour soup; (C) Herbal dish; (D) Elderberry soft drink; (E) Plums jam.



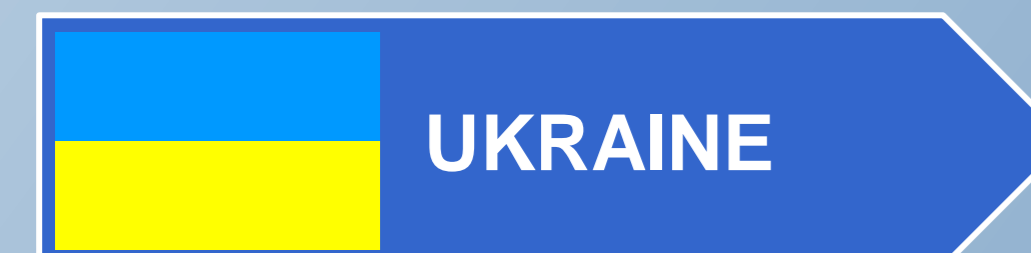
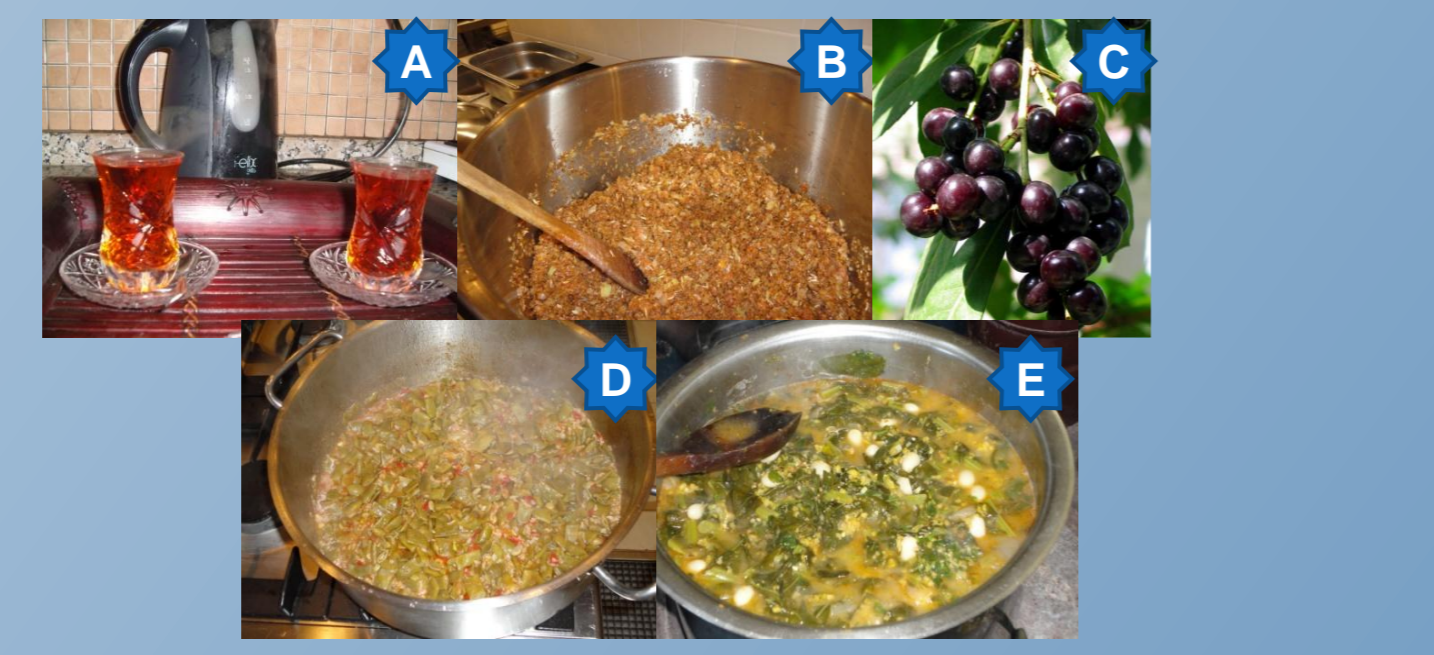
RUSSIAN FEDERATION

(A) Buckwheat porridge crumbly; (B) Kvass southern; (C) Watermelon juice; (D) Mustard oil; (E) Vegetable okroshka.



TURKEY

(A) Black tea; (B) Bulgur pilaf; (C) Fruit of the evergreen cherry laurel; (D) Sautéed pickled green beans; (E) Kale soup.



UKRAINE

(A) Sauerkraut; (B) Ukrainian borsch; (C) Transcarpathian green borsch; (D) Roasted sunflower seeds; (E) Uzvar; (F) Sour rye bread; (G) Cottage cheese with dill and garlic.



Figure 1. Selected traditional foods from BSAC.

ACKNOWLEDGEMENTS

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REFERENCES

- [1] D'Antuono L.F., Sanches-Silva A., Soares Costa H. (2010). BaSeFood: Sustainable exploitation of bioactive components from the Black Sea Area traditional foods. *Nutrition Bulletin*, 35, 272-278.
[2] AOAC 2000 - 948.15. Official methods of analysis of AOAC International. Gaithersburg, USA: AOAC International.
[3] Sanches-Silva, A., Quirós A. R., López-Hernández, J., Paseiro-Losada, P. 2003. Gas chromatographic determination of glycerides in potato crisps fried in different oils. *Journal of Chromatography A*, 58, 517-521.

MATERIALS AND METHODS

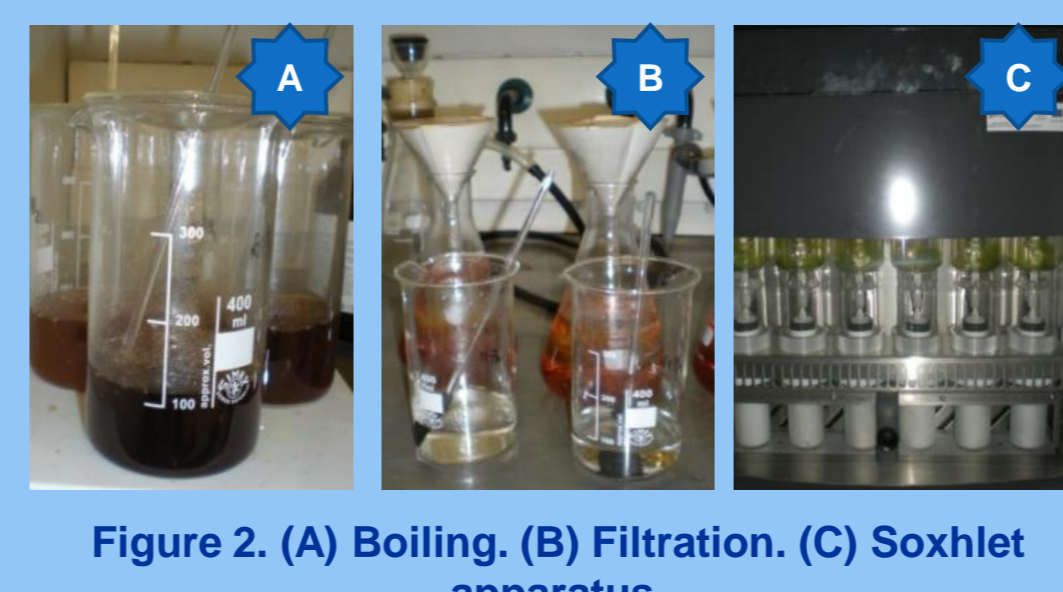
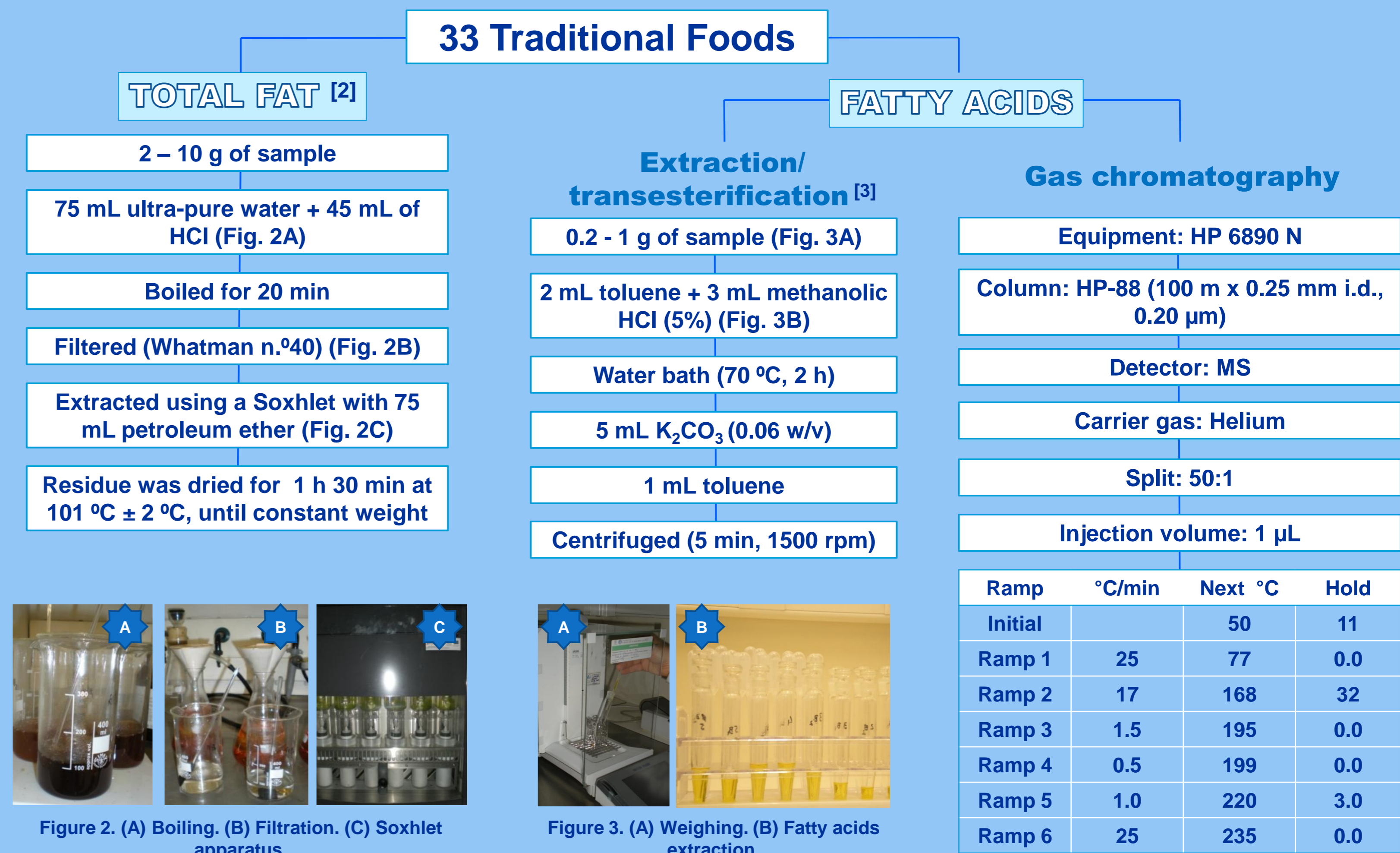


Figure 2. (A) Boiling, (B) Filtration, (C) Soxhlet apparatus.



Figure 3. (A) Weighing, (B) Fatty acids extraction.

RESULTS

Total fat content ranged between 0.138 g/100 g for Uzvar (Ukraine) and 99.9 g/100 g for flax oil and mustard oil (Fig. 4).

From the 33 analysed traditional foods, 27.3% had fat contents below the limit of quantification (< 0.1 g/100 g).

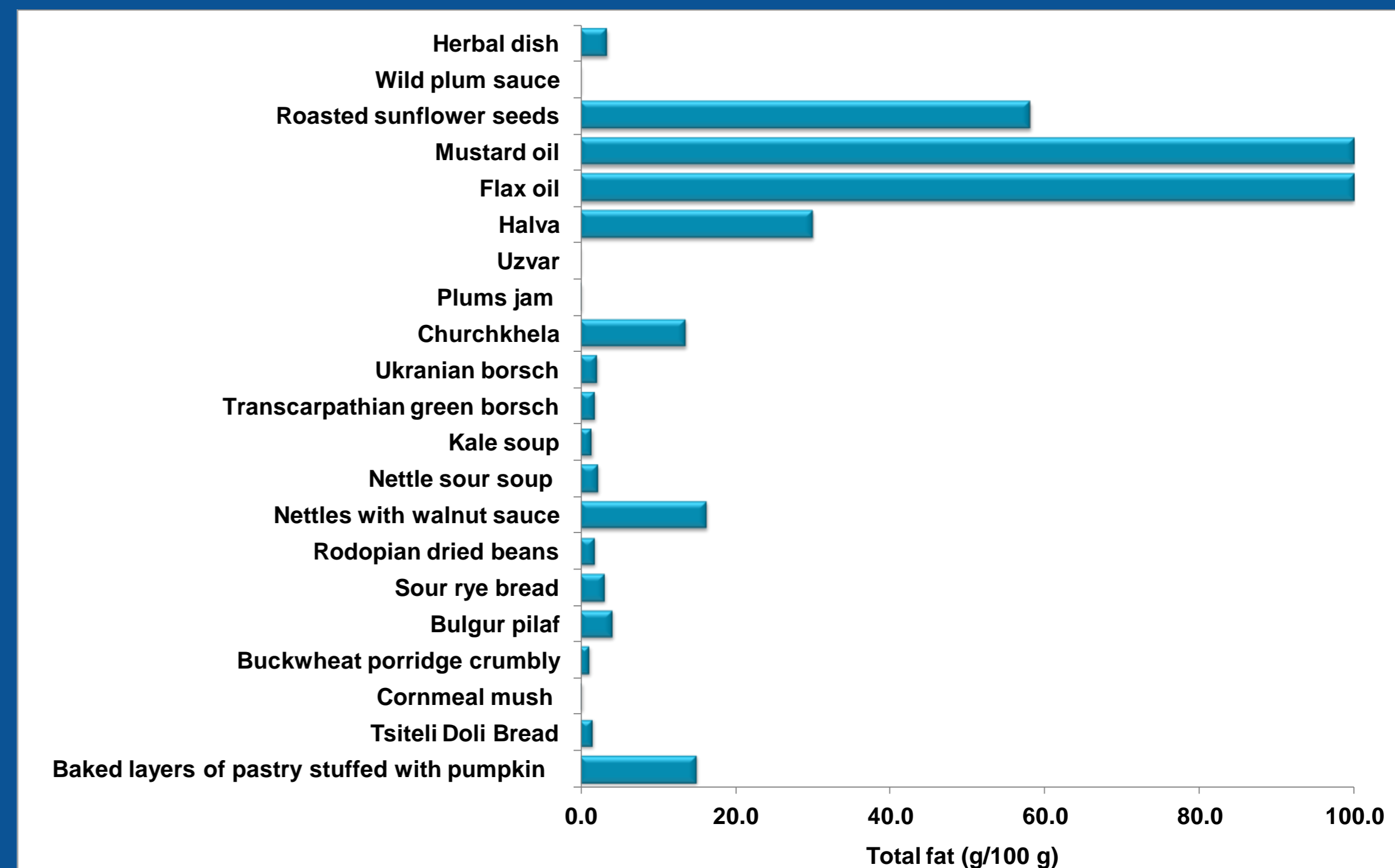


Figure 4. Total fat content (g/100 g of edible portion) of the analysed traditional foods from BSAC.

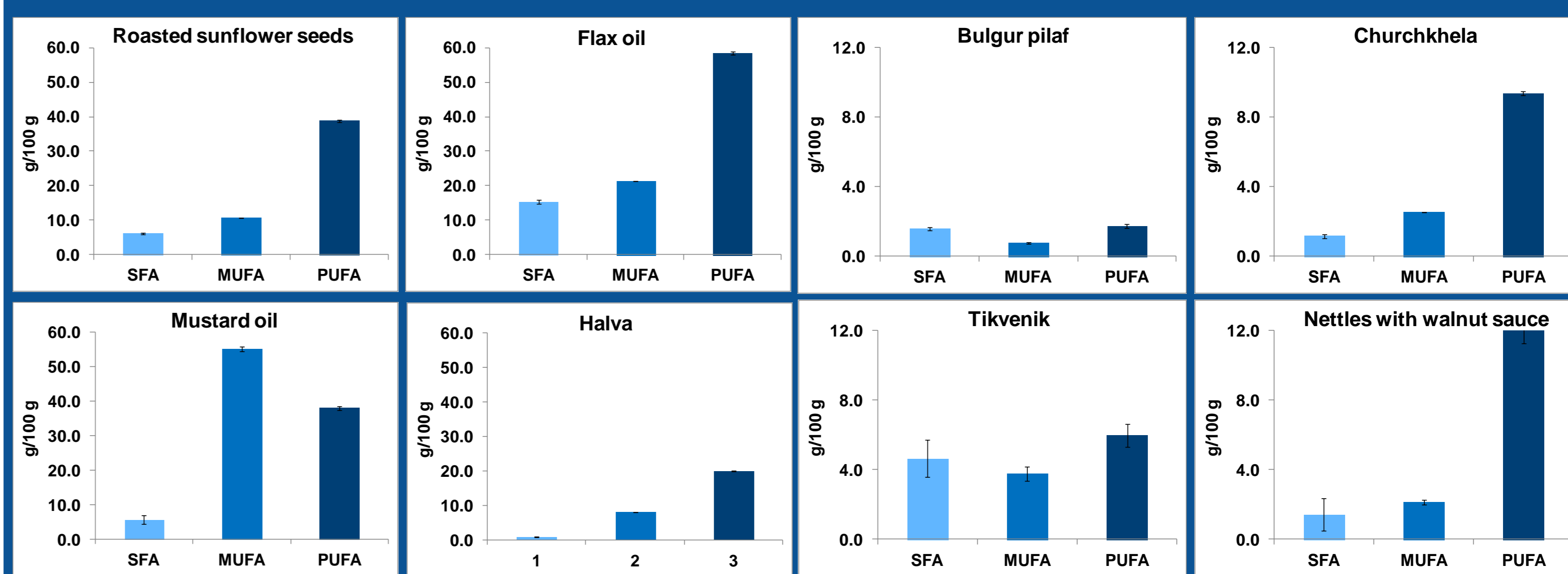


Figure 5. Fatty acids content (g/100 g of edible portion) of the analysed traditional foods from BSAC.

The highest content for saturated and polyunsaturated FA (Fig. 5) was found for flax oil (15.3 ± 0.6 g/100 g and 58.5 ± 0.5 g/100 g, respectively).

Mustard oil showed the highest value for monounsaturated FA (55.1 ± 0.7 g/100 g), although it also has a high polyunsaturated FA content (38.0 ± 0.6 g/100 g of edible portion).

CONCLUSION

In general, there was a great variability of results with respect to the FA profile of the analyzed traditional foods from BSAC, since there is a wide range of traditional foods from different countries and cultures. Some traditional foods from BSAC are a good source of unsaturated FA which are related to several health benefits.