

entre municípios, assim como relativamente aos valores 6,2% (ovelha) e 4,0% (cabra). Por análise espacial e temporal os teores de gordura anuais dos leites de ovelha e de cabra associados aos municípios foram utilizados na deteção dos *clusters* mais prováveis.

CONCLUSÕES: Conclui-se que as técnicas de análise espacial permitiram segmentar a região de acordo com os teores de gordura, contribuindo assim para a apresentação de propostas de valor neste setor.

P68: ALIMENTAÇÃO VIVA E SEGURANÇA ALIMENTAR: IMPACTO DA TEMPERATURA NA QUALIDADE MICROBIOLÓGICA DE BOLACHAS ARTESANAIS

Bruna Barbosa¹; Dina Rodrigues²; Marta Guimarães²; Ana Cristina Freitas²; Ana Maria Gomes²; Ana Pimenta Martins²

¹ Ciências da Nutrição da Escola Superior de Biotecnologia da Universidade Católica Portuguesa

² Centro de Biotecnologia e Química Fina – Laboratório Associado da Escola Superior de Biotecnologia da Universidade Católica Portuguesa

INTRODUÇÃO: A Alimentação Viva (AV) baseia-se no consumo de alimentos vegetais que podem ser consumidos crus, demolidos e/ou germinados ou desidratados a temperaturas não superiores a 42-46 °C, preservando-se enzimas e nutrientes.

OBJETIVOS: Avaliar o impacto de temperaturas moderadas (41 °C, 52 °C, 63 °C) e elevadas (120 °C) na qualidade microbiológica de bolachas artesanais.

METODOLOGIA: Elaboraram-se bolachas com ingredientes biológicos adquiridos no mercado: tâmaras, farinhas de coco e amêndoa, óleo de coco, sementes de chia e de trigo-sarraceno germinado. Adicionalmente, a farinha de grão-de-bico germinado (FGBG) foi obtida a partir da demolha (24h/5 °C), germinação (3 dias/21 °C), desidratação (41 °C/29h), moagem e peneiração das sementes. Submeteram-se as bolachas cruas a diferentes temperaturas/tempos de secagem: 41 °C, 52 °C, 63 °C/24h no desidratador e 120 °C/20min no forno. Realizaram-se análises microbiológicas à FGBG, bolachas cruas e confeccionadas: contagem de bactérias mesófilas totais, enterococos, enterobactérias, bolores e leveduras, bactérias lácticas, *Bacillus cereus*, estafilococos totais e *Staphylococcus aureus*. Determinou-se a humidade e a atividade da água das bolachas.

RESULTADOS: Detetaram-se números elevados (5,80-9,70 UFC's/g) de células viáveis de mesófilos, enterobactérias, bolores e leveduras na FGBG e desidratada. As bolachas cruas apresentavam contaminação por bolores e leveduras, enterobactérias, estafilococos totais e bactérias lácticas. A densidade microbiana diminuiu com o aumento da temperatura: a 41 °C e 52 °C/24h registaram-se elevadas densidades microbianas [todos os grupos de microrganismos, com exceção de *B. cereus* (4,50-9,70 UFC's/g)]; a 63 °C/24h ocorreu uma diminuição substancial (4,70-5,70 UFC's/g) e a 120°C/20min todos os valores abaixo dos limites de deteção (<2,5 ou 3,5 UFC's/g). O teor de humidade e a atividade da água das bolachas cruas e confeccionadas diminuíram com o aumento da temperatura: 44,5±1,0% e 0,565±0,021 para 13,1±0,6% e 0,529±0,031, respetivamente.

CONCLUSÕES: A temperatura é um fator determinante no controlo da contaminação microbiológica, devendo os apologistas da AV estarem alerta para os perigos associados ao consumo de alimentos desidratados a baixas temperaturas.

P69: CHLORELLA VULGARIS: CHARACTERIZATION OF THE LIPID FRACTION BASED ON THE LIPID CLASSES AND FATTY ACID PROFILE

Ana Gomes^{1,2}; Joana Matos^{1,3}; Carlos Cardoso^{1,2}; Cláudia Afonso^{1,2}; Pedro Cañavate⁴; Narcisca Maria Bandarra^{1,2}

¹ Division of Aquaculture, Upgrading and, Bioprospection, Portuguese Institute for the Sea and Atmosphere

² Interdisciplinary Centre of Marine and Environmental Research, University of Porto

³ Faculdade de Ciências da Universidade de Lisboa

⁴ IFAPA Centro El Toruño, Andalusia Research and Training Institute for Fisheries and Agriculture

INTRODUCTION: Microalgae are already widely used by the food industry. Because they grow under very diverse environmental conditions, these organisms often have a unique lipid profile. Glycolipids are one of the most important lipid classes. They play an important role in microalgae physiology but also bring beneficial health effects to humans. Their antifungal, antiviral, and antitumoral properties are some examples.

OBJECTIVES: Considering *Chlorella vulgaris* is one of the algae most used by the food industry and its nutritional potential, this work aimed to characterize its lipid composition based on the lipid classes and fatty acid profile.

METHODOLOGY: The lipid fraction of *C. vulgaris* was extracted and the lipid classes determined by means of High Performance Thin Layer Chromatography (HPTLC) and the fatty acid profile by Gas Chromatography (GC-FID).

RESULTS: The lipid fraction accounted for 12.0 ± 0.1% w/dw of the *C. vulgaris* biomass. Non polar lipids were the most abundant (49.4 ± 2.1%), wherein an important fraction of these lipids were found as free fatty acids (35.5 ± 1.7%). Polar lipids, in turn, corresponded to 30.5 ± 2.3% of the total lipids, representing the glycolipid fraction 22.8 ± 1.5%.

On the other hand, in what concerns the fatty acid profile, MUFA stood out with 35.2 ± 0.1%, followed by the SFA (26.7 ± 0.1%) and the PUFA (21.9 ± 0.2%). The oleic acid (18:1 n9) accounted 11.7 ± 0.1%, the equivalent to one-third of all MUFA. Among the PUFA, linoleic (18:2 n6) and α -linolenic (18:3 n3) fatty acids were the most important with 11.2 ± 0.0% and 10.1 ± 0.2%, respectively.

CONCLUSIONS: Based on the results, it is important to highlight the important contribution of the glycolipids, as well as the MUFA for the total lipid fraction. Further studies are needed in order to know more specifically the glycolipid composition in *C. vulgaris*.

ACKNOWLEDGEMENTS: The experimental work was funded by the project AQUAMAX (Ref.: 16-02-01-FMP-0047). This work was supported by the following Post Doctoral Grants: IPMA-2017-48-BPD (Algared+ Project) for the author Ana Gomes, SFRH/BPD/102689/2014 ("Fundação para a Ciência e a Tecnologia", FCT) for the author Carlos Cardoso and DIVERSIAQUA (MAR2020, Ref.: 16-02-01-FEAM-66) for the author Cláudia Afonso. Doctoral grant awarded by FCT supported the work performed by Joana Matos (SFRH/BD/129795/2017).

P70: FATTY ACIDS AND RELATED NUTRITIONAL/ HEALTHY INDEXES REGARDING SERRA DA ESTRELA CHEESE: GEOGRAPHICAL ORIGIN AND PRODUCTION DATE EFFECTS

Maria João Reis Lima^{1,2}; Luísa Fontes¹; Ana CA Veloso^{3,4}; Edite T Lemos^{1,2}; António M Peres^{5,6}

¹ Departamento Indústrias Alimentares da Escola Superior Agrária Viseu do Instituto Politécnico Viseu

² CI&DETS and CERNAS do Instituto Politécnico Viseu

³ Departamento Engenharia Química e Biológica do Instituto Politécnico de Coimbra

⁴ Centro de Engenharia Biológica da Universidade do Minho

⁵ Centro de Investigação de Montanha do Instituto Politécnico de Bragança

⁶ LSRE-LCM Associate Laboratory da Escola Superior Agrária Bragança do Instituto Politécnico de Bragança

INTRODUCTION: Serra da Estrela (SE) is a traditional Portuguese cheese with a Protected Designation of Origin (PDO) certification. Although worldwide

appreciated, consumers have perceived cheese as a food with a high fat content, rich in nutritionally controversial saturated fatty acids, which are usually related to the increase of blood plasma cholesterol concentration and for a growing incidence in coronary heart diseases.

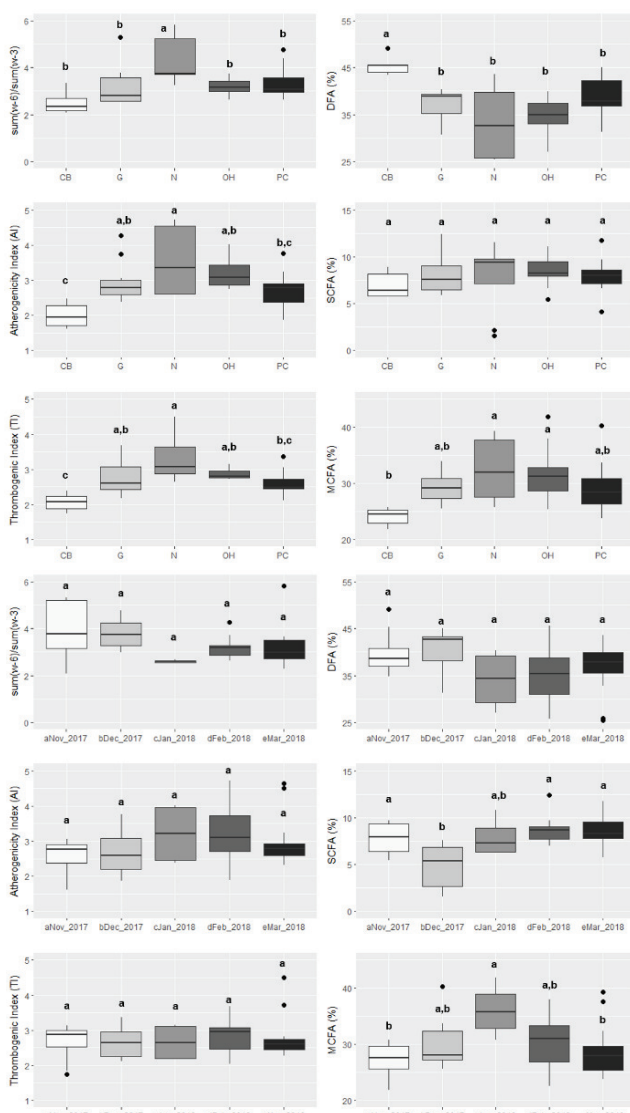
OBJECTIVES: This study aimed to establish fatty acids (FA) profiles and related nutritional (ω -6: ω -3 ratio), desirable fatty acids contents and healthy indices (atherogenic and thrombogenic indices) of SE cheeses, and to evaluate the influence of cheese origin and production date.

METHODOLOGY: SE cheeses were acquired from 6 certified producers located in 5 municipalities (Celorico da Beira, Gouveia, Nelas, Oliveira do Hospital and Penalva do Castelo, and produced from Nov 2017 to March 2018. The FA profiles were established, by gas chromatography with a flame ionization detector, being extracted according to ISO 14156:2001. All statistical analysis was performed using the Subselect and MASS packages of the open source statistical R program.

RESULTS: The results showed that cheese origin differences arisen on the total contents of saturated, unsaturated and polyunsaturated FA (P-value<0.05, one-way ANOVA), whilst no such differences were found for the production date (P-value>0.05, one-way ANOVA). Cheese origin also significantly influenced nutritional and healthy indices, which was not so clear for the production date (Figure 1).

FIGURE 1

Nutritional and healthy indexes of Serra da Estrela cheeses: geographical origin and production date effects



CONCLUSIONS: Although a diet rich in fats may increase the risk of some diseases, in the correct dose, it could be possible to reach a positive association between cheese consumption and healthy fat.

ACKNOWLEDGMENTS: This research was financially supported by LSRE-LCM-UID/EQU/50020/2019, UID/BIO/04469/2019-CEB and BioTecNorte operation (NORTE-01-0145-FEDER-000004), PEst-OE/AGR/UI0690/2014-CIMO and by Project 02/SAICT/2016/23290-QCLASSE, through POCI-01-0145-FEDER-023290.

P71: COMPARISON OF THE INGESTION OF FIBRE RICH FOODS IN DIFFERENT COUNTRIES

Sofia G Florença¹; Marcela Leal²; Ivana Rumbak³; Irena Barić³; Drazenka Komes³; Zvonimir Satalić⁴; Marijana Sarić⁴; Monica Tarcea⁵; Zita Fazakas⁵; Viktória Szűcs⁶; Júlia Harangozó⁶; Dace Klava⁷; Evita Straumite⁷; Raquel Guiné⁸

¹ Faculty of Food and Nutrition Sciences, University of Oporto

² Faculty of Health Sciences, Maimonides University

³ Faculty of Food Technology and Biotechnology, University of Zagreb

⁴ Department of Health Studies, University of Zadar

⁵ University of Medicine and Pharmacy from Targu-Mures

⁶ National Agricultural R&I Centre - Food Science Research Institute

⁷ LUA Latvia University of Agriculture

⁸ CI&DETS/CERNAS Research Centres, Polytechnic Institute of Viseu

INTRODUCTION: The ingestion of fruits, vegetables and cereals, especially whole grain, is associated with a healthy lifestyle and has been recognized as having multiple health benefits, associated, among others, to the ingestion of adequate amounts of dietary fibre.

OBJECTIVES: The aim of this work was to evaluate some eating habits related to fibre rich foods in six different countries: Argentina, Croatia, Hungary, Latvia, Portugal and Romania.

METHODOLOGY: A cross-sectional descriptive study was carried out by means of questionnaire survey applied to a sample of 4905 participants, all over the age of 18 years old. The preparation and application of the questionnaire followed the necessary ethical guidelines and the treatment was made by SPSS.

RESULTS: The results showed that for the global sample was observed a low ingestion of salads and vegetables (78.2%), being this particularly problematic for Croatia (86.6%). Regarding the consumption of fruits, for the whole sample the great majority also showed a low consumption (92.3%), and for Latvian participants the percentage is very much expressive (98.3%). As for the consumption of whole cereals, most participants also showed a low consumption, either for the global sample (72.6%) or in the different countries, and particularly for Latvia (90.0%). Some eating habits were also studied and it was observed that for the whole sample 71.9% showed a low frequency of meals ate out of home, while 88.6% revealed acceptable frequency of eating fast food, i.e., only once or twice a week.

CONCLUSIONS: The results indicated that in the countries at study the ingestion of foods rich in dietary fibre is very low, and therefore it is necessary to implement strategies to increase the consumption of such foods.

FUNDING: This work was prepared in the ambit of the multinational project from CI&DETS Research Centre (IPV - Viseu, Portugal) with reference PROJ/CI&DETS/2014/0001.

P72: DETERMINAÇÃO DE ANTOCIANINAS EM GRÃOS DE SOJA PRETA

Daiana Rosso Ferreira Leithardt¹; Aline Naomi Yamashita¹; Adelaide Del Pino Beléia¹