



# ACTA PORTUGUESA DE NUTRIÇÃO

A REVISTA DA ASSOCIAÇÃO PORTUGUESA DE NUTRIÇÃO

17

abr. jun. '19  
Distribuição Gratuita  
ISSN: 2183-5985

the effect of the inflammatory potential of diet.

In a cross-sectional study, 501 (48.1% males, aged 7 to 12 years) of 858 children attending 71 classrooms from 20 local schools were selected. Spirometry and airway reversibility, exhaled level of nitric oxide, skin-prick testing and current symptoms (breathing difficulties and irritative cough) were assessed. Dietary inflammatory potential was evaluated by the Dietary Inflammatory Index (DII) and calculated from a 24-hour dietary recall. Indoor air quality measurements were conducted in 20 schools and 71 classrooms for one week. The proportion of effects explained by the exposures to PM2.5 and PM10 were measured by generalized linear mixed model.

After adjustments, a more inflammatory diet increased the risk of children with asthma for PM2.5 (OR=1.67, 95% CI 1.03, 2.73) and PM10 (OR= 1.75, 95% CI 1.07, 2.87) levels. Considering the inflammatory potential of diet in the exposure to PM2.5 and PM10, the risk of asthma increased in parallel with the DII, being statistically significant for children with asthma (OR= 0.89, 95% CI 0.81, 0.97 and OR= 0.92, 95% CI 0.87, 0.97).

These findings provide further support to the role of diet's inflammatory characteristics modulating the effects of indoor air pollution on lung function, highlighting the importance of children's diet as a potential solution to reduce the risk of asthma due to air pollution.

Multilevel model analysis to analyze diet inflammatory potential in the association between PM and asthma defined by Medical diagnosis under asthma treatment.

TABLE 1

	MODEL 0	MODEL 1	MODEL 2
	OR (95% CI)	OR (95% CI)	OR (95% CI)
PM2.5	0.88 (0.74; 1.01)	<b>0.78 (0.61; 0.95)</b>	<b>0.76 (0.60; 0.93)</b>
DII	0.91 (0.70; 1.18)	1.62 (0.98; 2.71)	<b>1.67 (1.03; 2.73)</b>
PM2.5 x DII	---	<b>0.89 (0.81; 0.97)</b>	<b>0.89 (0.81; 0.97)</b>
PM10	0.91 (0.81; 1.00)	<b>0.85 (0.73; 0.95)</b>	<b>0.83 (0.71; 0.93)</b>
DII	0.90 (0.69; 1.16)	<b>1.65 (1.00; 2.77)</b>	<b>1.75 (1.07; 2.87)</b>
PM10 x DII	---	<b>0.93 (0.87; 0.98)</b>	<b>0.92 (0.87; 0.97)</b>

PM2.5: Particulate Matter 2.5 represented per 100 units

PM10: Particulate Matter 10 represented per 100 units

DII: Dietary Inflammatory Index

PM2.5 x DII: Dietary inflammatory index as an interaction term

Model 0: Main effects

Model 1: interaction with DII

Model 2: Additionally adjusted age, sex, body mass categories according to CDC and exposure to tobacco at home

Significant differences in bold

## CO10: CHARACTERIZATION OF THE OIL EXTRACTED FROM THE *STRYCHNOUS MADAGASCARIENSIS* FRUIT

**Sandra SI Chemane<sup>1,3</sup>; Susana Casal<sup>2</sup>; Teresa Pinho<sup>2</sup>; Maida Khan<sup>4</sup>; Olívia Pinho<sup>1,2</sup>; Olga Viegas<sup>1,2</sup>**

<sup>1</sup> Faculdade de Ciências da Nutrição e Alimentação da Universidade do Porto

<sup>2</sup> LAQV/REQUIMTE, Laboratório de Bromatologia e Hidrologia, Departamento de Ciências Químicas da Faculdade de Farmácia da Universidade do Porto

<sup>3</sup> Departamento de Engenharia Rural da Faculdade de Agronomia e Engenharia Florestal da Universidade Eduardo Mondlane

<sup>4</sup> Departamento de Engenharia Química da Faculdade de Engenharia da Universidade Eduardo Mondlane

**INTRODUCTION:** *Strychnos madagascariensis* is a fruit tree, abundant in South-African countries. In Mozambique, rural communities produce a flour called "nfuma" from the pulp of its large fruits, which is consumed in times of shortage. Nfuma flour has a high fat content (around 30%), and some consumers separate the oil from the flour by pressing to use it both as a seasoning and as a medicine.

**OBJECTIVES:** With an increasingly demand for alternative vegetable oils sources,

the goal of this work was to characterize the oil from *S. madagascariensis* fruit pulp from Moçambique in terms of fatty acid profile and important bioactive components to exploit its potential applications.

**METHODOLOGY:** Samples were collected from Marracuene, Manhiça, Chokwé and Chicualacuala communities. After production of flour "nfuma", the oil was extracted by manual press. Fatty acids were evaluated as methyl esters after by gas chromatography with flame ionization detection, tocopherols were determined by normal-phase high performance liquid chromatography with fluorescence detection, and total carotenoids were estimated on the basis of carotene molecular absorptivity.

**RESULTS:** *S. madagascariensis* oil is characterized by a high content of oleic acid (62-63%), followed by palmitic (19-20%), linoleic (6-7%) and stearic (4.5-5%) acids, highly consistent between samples. The analysis of lipophilic vitamins reveals the presence of considerable amounts of tocopherols (242-355 mg/kg) and carotenoids (8-15 mg/kg).

**CONCLUSIONS:** The oil extracted from the fruit of *S. madagascariensis* has oleic acid as its main fatty acid, being therefore a monounsaturated oil. Together with its richness in tocopherols and carotenoids, it represents a great potential to become a promising commercial source of an edible oil for the food industry, having healthful properties associated with a potential high resistance to oxidation.

## CO11: DOES COOKING HELP MITIGATE BROMINATED FLAME-RETARDANTS IN FISH?

**Rebeca Cruz<sup>1</sup>; António Marques<sup>2,3</sup>; Susana Casal<sup>1</sup>; Sara C Cunha<sup>1</sup>**

<sup>1</sup> LAQV/REQUIMTE da Faculdade de Farmácia da Universidade do Porto

<sup>2</sup> Instituto Português do Mar e da Atmosfera

<sup>3</sup> Centro Interdisciplinar de Investigação Marinha e Ambiental da Universidade do Porto

**INTRODUCTION:** Polybrominated diphenyl ethers (PBDEs) are additive brominated flame-retardants with recognised endocrine disruptive effects. They can find their way into the environment by different routes and processes. The dietary route, through seafood consumption, is a main responsible for human exposure. Moreover, their biologically active metabolites – methoxylated PBDEs (MeO-PBDEs) have also been found in these foods.

**OBJECTIVES:** Hence, the aim of this work was to evaluate the potential of household cooking practices as mitigation strategies for these classes of flame-retardants in fish.

**METHODOLOGY:** Farmed Atlantic salmon was obtained from a retail market in Porto, Portugal. Muscle without skin or bones was finely minced, then and identical cylindrical burgers (10 g) were prepared and subjected to three different and optimized cooking methods: 1) Steaming; 2) Grilling, and 3) Microwaving. Moisture and lipid contents were determined in raw and cooked samples by standardized methods. Further analyses were performed by matrix-matched validated methods and instrumental detection was conducted by GC-MS/MS.

**RESULTS:** Most of the tested compounds were considerably reduced after cooking (Figure 1), especially by grilling (up to 19.5% reduction). This evidence may be related to a greater loss of lipids during grilling, since PBDEs and MeO-PBDEs are highly lipophilic substances. However, BDE-47 and BDE-99, the two most prevalent congeners in seafood, do not seem to be affected by food processing (p > 0.05).



**ASSOCIAÇÃO PORTUGUESA DE NUTRIÇÃO**  
Rua João das Regras, n.º 278 e 284 - R/C 3, 4000-291 Porto | Tel.: +351 22 208 59 81 | Fax: +351 22 208 51 45  
geral@apn.org.pt | www.apn.org.pt | www.facebook.com/associacaoportuguesanutricionistas  
actaportuguesadenutricao@apn.org.pt | www.actaportuguesadenutricao.pt

