

# BOOK OF ABSTRACTS



**U.** PORTO

**ENCONTRO  
INVESTIGAÇÃO  
JOVEM**

**12.13.14  
FEV.  
2020**

**13.<sup>a</sup> EDIÇÃO**

**UNIVERSIDADE  
DO PORTO**

**REITORIA**  
UNIVERSIDADE  
DO PORTO

**U. PORTO**

## CREDITS

Livro de Resumos do 13.º Encontro de Jovens Investigadores da U.PORTO

Universidade do Porto

Vice-reitor para a investigação, inovação e internacionalização  
Professor Doutor Pedro Rodrigues

ijup@reit.up.pt

ISBN

978-989-746-253-5

Design

Serviço de Comunicação e Imagem da U.Porto

## SCIENTIFIC COMMITTEE

Alexandra Pinto

Aurora Teixeira

Elisa Keating

Elisabete Ferreira

Filipe Castro

Gonçalo Furtado

Graciela Machado

Isabel Pinto

Jorge Teixeira

Laura Oliveira

Liliana Grenho

Manuel Simões

Maria Oliveira

Maria Paula Santos

Patricia Antunes

Patrícia Valentão

Pedro Rodrigues

Ricardo Fernandes

Rita Faria

Rita Gaio

Rute Pedro

Sérgio Sousa

- **16820 | Opuntia ficus-indica - red variety: comparative analysis between cladodes and fruit**

L. Espírito Santo, Faculdade de Ciências da Universidade do Porto, Portugal

A. Gomes, Faculdade de Farmácia da Universidade do Porto, Portugal

M. A. Nunes, Faculdade de Farmácia da Universidade do Porto, Portugal

A. S. G. Costa, Faculdade de Farmácia da Universidade do Porto, Portugal

A. Rocha, Faculdade de Ciências da Nutrição e Alimentação da Universidade do Porto, Portugal

M. B. P. P. Oliveira, Faculdade de Farmácia da Universidade do Porto, Portugal

*Opuntia ficus-indica* (L.) Miller is commonly known in Portugal as figueira-da-índia. Although wild plants could be found, these gained expression in our country as a crop, especially in the south of Portugal [1]. For that, the study of the plant, specifically its stems, cladodes, and fruits, becomes of utmost importance to support their consumption *in natura* or to develop other applications in food industry.

From this perspective, this study aimed to evaluate the nutritional composition and antioxidants content of cladodes and fruits of the red variety. The samples were produced in Torres Novas (Portugal).

The nutritional profile of cladodes and fruits was determined by AOAC methods [2] and the sugar composition by HPLC-ELSD [3]. For antioxidant compounds evaluation, the extraction was performed using different solvents: 100% water, water/ethanol (1:1) and 100% ethanol. The total phenolics and flavonoids contents, DPPH, and FRAP of the sample extracts were evaluated by spectrophotometric methods [4].

According to table 1, the nutritional profile of the fruit stands out in relation to the cladodes. However, both have low-fat contents and interesting amounts of protein. Cactus pear has a slightly higher total fiber content and carbohydrates. Fructose and glucose were the main sugars identified in the fruit whereas, in the cladodes, sucrose was also present. The cladodes stand out for their value in total minerals. Regarding antioxidant activity, the water/ethanol mixture (1:1) allowed a more efficient extraction in both samples.

Given the chemical similarities between cladodes and fruits of the red variety, the increase of this production and their dissemination, promotion, and valorization is justified. Nevertheless, different applications improve the potential of these products to be part of a healthy food pattern, their contribution to sustainable access to food, and promotion of food diversity.

**Table 1. Nutritional composition of red variety of the cactus pear and cladodes**

Sample	Moisture (%)	Fat*	Protein*	Ashes*	Dietary Fibre*	Carbohydrates*
Red Cactus pear	80.53 ± 1.22	1.50 ± 0.09	6.40 ± 0.41	3.86 ± 0.06	27.27 ± 0.36	60.90 ± 0.16
Red Cladodes	92.05 ± 0.11	1.73 ± 0.33	3.48 ± 0.36	20.70 ± 0.04	22.95 ± 0.23	51.18 ± 0.57

\* Results presented as g/100 g dw

References:

[1] A Cultura da Figueira-da-índia e a Valorização Agroindustrial do Fruto. Instituto Nacional de Investigação Agrária e Veterinária, I.P. (INIAV, I.P.) ed. 2016. 101.

[2] AOAC, Métodos oficiais de análise da Association of Analytical Chemistry, 19<sup>a</sup> ed., Maryland, EUA, AOAC International, 2012.

[3] Chunmei Ma, Zhen Sun, Changbao Chen, Lili Zhang, Shuhua Zhu. Food Chemistry, 145 (2014) 784-788.

[4] Costa, A.S.G., Alves, R.C., Vinha, A.F., Barreira, S., Nunes, M.A., Cunha, L., Oliveira, M.B.P.P., Ind. Crops and Prod, 53 (2014) 350-357.

Acknowledgments: The authors are grateful for the funding of the UID / QUI / 50006/2019 project through national funds from FCT / MCTES (Portugal). M. A. Nunes thanks the PhD Fellowship SFRH / BD / 130131/2017 to FCT. The authors also thank producer Paulo Costa (Torres Novas) for kindly providing the samples.