



**INSTITUTO  
DE INVESTIGAÇÃO  
E INOVAÇÃO  
EM SAÚDE  
UNIVERSIDADE  
DO PORTO**

**5<sup>TH</sup> ANNUAL MEETING  
3-4 OF NOVEMBER 2016  
AXIS VERMAR CONFERENCE &  
BEACH HOTEL, PÓVOA DE VARZIM**

# welcome

Dear colleagues,

It is a pleasure to welcome you all to the next i3S Annual Meeting following a year gap, which coincided with the integration of the three institutes in the new “house” at Asprela. Nevertheless, in this new era for our gatherings we will be revisiting a place of old memories, i.e. the 5th i3S Annual Meeting will take place on the 3-4 of November 2016 at the Axis Vermar Conference & Beach Hotel, Póvoa de Varzim.

The general concept maintains the spirit of the preceding events with three main sessions devoted to scientific talks on the topics of the i3S Integrative Research Programs. Each session will include plenary lectures by invited external speakers. In anticipation of your challenging abstracts we have also extended time dedicated to the Poster’s discussion.

We therefore encourage you to register, submit your abstracts and join us for this unique event.

The Organizing Committee

**Scientific & Organizing  
Committee**

Filipa Carvalho

Isabel Cardoso

Nuno Alves

Paula Soares

Pedro Rodrigues

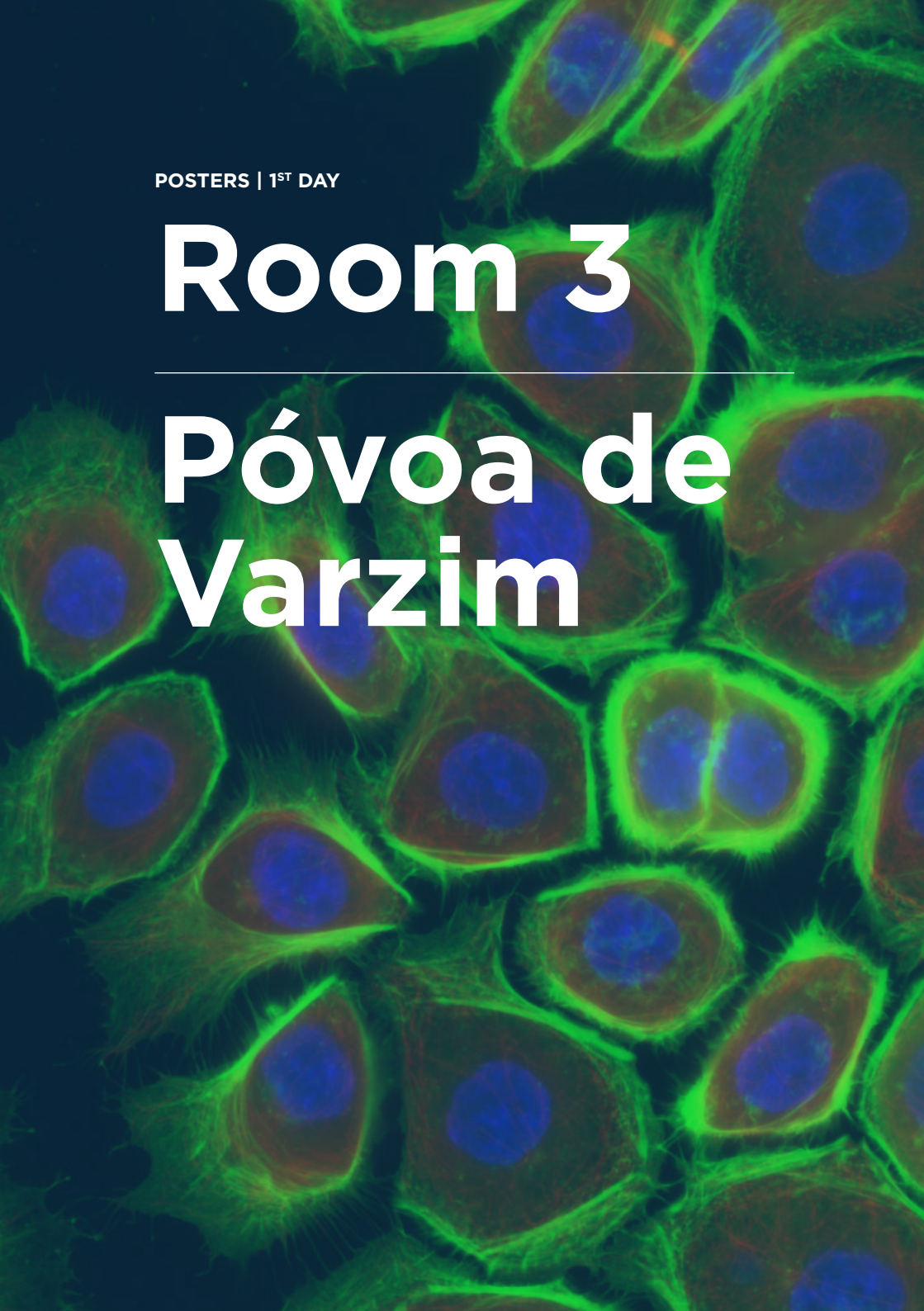
Perpétua Pinto-do-Ó

POSTERS | 1<sup>ST</sup> DAY

# Room 3

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# Póvoa de Varzim



## ***Leccinum vulpinum* Watling: nutritional, antioxidant and antitumour potential**

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The global economic value of mushrooms is significant, not only due to their value as food [1] but also their medicinal properties, some of them having particularly been described to have antioxidant and antitumour potential [2,3]. Furthermore, some mushroom extracts have reached clinical trials. Additionally, in Japan, PSK (a polysaccharide conjugate isolated from *Trametes versicolor* (L.) Lloyd), is prescribed as an adjunct to conventional cancer therapies and surgical treatments of colorectal and gastric cancers [4].

The aim of this work was to study the chemical profile of *Leccinum vulpinum* Watling, regarding its content in nutrients and non-nutrients. Moreover, to study the *in vitro* antioxidant and antitumour potential of its phenolic extract.

*L. vulpinum* wild samples were collected in Bragança, in the northeastern region of Portugal. The nutritional value was assessed following standard procedures. The individual profiles in soluble sugars, fatty acids and micronutrients were obtained through chromatographic techniques. The antioxidant potential of the phenolic extract was evaluated through the reducing power, DPPH radical-scavenging activity and lipid peroxidation inhibition assays. To assess the antitumour potential, the extract was screened against a panel of human tumour cell lines (MCF-7, NCI-H460, HCT-15 and AGS). Studies of effect on cell proliferation, cell cycle profile and apoptosis were performed on MCF-7 cells. The effect on DNA damage was evaluated with the Comet assay.

*L. vulpinum* showed a nutritional profile with low fat levels, fructose, mannitol and trehalose as the foremost free sugars, and high percentage of mono- and polyunsaturated fatty acids. The main isoforms of vitamin E detected were the  $\beta$ - and  $\gamma$ -tocopherol. *L. vulpinum* also revealed the presence of phenolic acids (e.g., gallic, protocatechuic and *p*-hydroxybenzoic acids) and other organic acids (e.g., citric acid). The phenolic extract presented reducing capacity, radical-scavenging activity and lipid peroxidation inhibition. Regarding the antitumour potential, the extract inhibited the growth of all the tested cell lines. In addition, it decreased cellular proliferation, induced apoptosis and caused DNA damage of MCF-7 cells.

The present study highlights the importance of conserving the national mycological resources, as a source of bioactive compounds with antioxidant and antitumour activity.

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**References:**

- [1] Kalač, P. (2013) J. Sci. Food Agric. 93: 209-218.
- [2] Ferreira, I.C.F.R., Barros, L., & Abreu, R. (2009). Curr. Med. Chem. 16: 1543-1560.
- [3] Ferreira, I.C.F.R., Vaz, J.A., Vasconcelos, M.H., & Martins, A. (2010). Anti-Cancer Agents Med. Chem. 10: 424-436.
- [4] The PSK Information Foundation. (2006). Available online from: <http://pskcancersupport.com/introduction/>