Micro Biotec'13

PORTUGUESE CONGRESS OF MICROBIOLOGY AND BIOTECHNOLOGY

6th – 8th December | Aveiro Portugal

Abstracts Book

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WELCOME ADDRESS

It is a great pleasure and privilege to welcome you to Aveiro and to the Portuguese Congress of Microbiology and Biotechnology (MicroBiotec'13).
This congress is an initiative of the Portuguese Society for Microbiology and the Portuguese Society for Biotechnology and is being hosted by the University of Aveiro for the first time.
The programme provides a unique opportunity for debate, discussion and the exchange of fresh ideas and information in the fields covered.
We are pleased to offer you an excellent scientific programme, with stimulating lectures with the involvement of international and national experts.
In addition, your contributions, that are highly welcomed, are presented in oral sessions or poster exhibitions that undoubtedly increase the knowledge of the latest scientific developments in the scientific domains covered by the congress.
We hope that it will be an enjoyable event that will provide an opportunity for delegates to discuss and share knowledge, ideas and expertise with colleagues and peers.
We wish you a fruitful meeting and a pleasant stay in Aveiro!

On behalf of the organizing committee,

António Correia & Manuel António Coimbra

MENSAGEM DE BOAS VINDAS

É um grande prazer e privilégio dar-lhes as boas vindas a Aveiro e ao Congresso Português de Microbiologia e Biotecnologia (MicroBiotec'13).
Este congresso é uma iniciativa da Sociedade Portuguesa de Microbiologia e da Sociedade Portuguesa de Biotecnologia e é organizado pela primeira vez pela Universidade de Aveiro.
O programa oferece uma oportunidade única para o debate, a discussão e a troca de ideias e informações inovadoras nos domínios abrangidos.
O excelente programa científico conta com a participação e com palestras proferidas por especialistas nacionais e estrangeiros.
Para além disso, as contribuições de todos os participantes foram muito bem-vindas sendo apresentadas em sessões orais ou na exposição de painéis que, sem dúvida, aumentam o conhecimento sobre os últimos desenvolvimentos científicos nos domínios do congresso.
Esperamos que seja um evento agradável e que proporcione uma oportunidade para discussão e partilha de conhecimentos, ideias e experiências com colegas e pares.
Desejamos-lhes uma reunião proveitosa e uma agradável estadia em Aveiro!

Em nome da comissão organizadora,

António Correia & Manuel António Coimbra

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SCIENTIFIC PROGRAM

December 6th

09:00-10:30	Registration
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11:35-12:25	Plenary Lecture – Chair: Manuel Mota S2: Environmental Microbiology and Biotechnology Alfons Stams Wageningen University, Netherlands Key features of syntrophic methanogenic communities
12:25-12:55	The Horizon 2020 Program – Dr. Maria João Fernandes (FCT; FP7 National Contact Point)
12:55-14:00	Lunch
14:00-14:25	Auditorium KL01 António Vicente Universidade do Minho Applications of nanotechnology in the agro-food sector Lecture Hall 1 KL02 David Smith CABI, UK Microbial resource research infrastructure (MIRRI) facilitating improved pathways to discovery Lecture Hall 2 KL03 Marta Aires-de-Sousa ESSCVP Methicillin-resistant *staphylococcus aureus*: a problem inside and outside portuguese hospitals
14:25-14:40	Auditorium OP01 Ana Oliveira ESB, CBQF, Universidade Católica Portuguesa Effect of controlled atmosphere and storage temperature on the phenolics and carotenoids of pasteurized peach purées Lecture Hall 1 OP05 Christophe Espírito Santo IMAR, CMA, Universidade de Lisboa Sequenced mobile elements from submarine hydrothermal vents include simultaneously genetic determinants for heavy metal and antibiotic resistance

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IHMT, Universidade Nova de Lisboa
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REQUIMTE/CQFB; IBET
Population analysis of a pha producing bioreactor subjected to feedstock shifts

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OP06 Diogo Pinho
Genoinseq, Next Generation Sequencing Unit, Biocant
Assessment of *Quercus suber* soil microbiome using DGGE fingerprints and barcoded pyrosequencing

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ITQB, Universidade Nova de Lisboa
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CICECO, Universidade de Aveiro
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CESAM, Universidade de Aveiro
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OP12 Pedro Farias
Instituto Piaget, CIIERT, Lisboa
Hospital´s environmental microbial communities: a survey in two hospitals with different dimensions

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Auditorium
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INESC, Microsistemas e Nanotecnologias and IN-Institute of Nanoscience and Nanotechnology, Lisboa
Aqueous two-phase system in a microfluidic platform to accelerate bioprocess design and optimization of monoclonal antibodies

Lecture Hall 1
OP08 Olga Lage
FC, Universidade do Porto
Bacteria associated with marine erylus sponges: their diversity and bioactivity

Lecture Hall 2
OP13 Isabel Miranda
FM, Universidade do Porto
Candida albicans CUG mistranslation is a mechanism to create cell surface variation

15:25–15:40 Auditorium

Flash oral presentations

P315/F01 Maria da Conceição Fernandes
CEBAL, Instituto Politécnico de Beja
Bioethanol production from extracted olive pomace

P302/F02 Sara F. Carvalho
CICECO, Universidade de Aveiro
Ionic-liquid-based aqueous biphasic systems: an alternative approach for the separation of extracellular polysaccharides

P072/F03 Carlos Boto
CIEPQPF, University of Coimbra
Immobilization of lipoxygenase into cellulose derivatives for mycotoxins detection in food

Lecture Hall 1

OP09 André Costa
CMEB, Universidade do Minho
Antibacterial and antifungal activity of a new solvent-cast film based on a functionalized elastin-like polymer

Lecture Hall 2

Flash oral presentations

P338/F09 Vânia Ferreira
University of Aveiro
Detection of premature stop codons leading to truncated internalin a among food and clinical strains of listeria monocytogenes

P337/F10 Sara Pais
Universidade Nova de Lisboa
Identification of type III secretion substrates of chlamydia trachomatis using yersinia enterocolitica as a heterologous system

P221/F11 Alcina M. M. B. Morais
Universidade Católica Portuguesa/Porto
Bioactive compounds from marine microalgae — Health applications

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Flash oral presentations

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CBQF, Universidade Católica Portuguesa/Porto
Food safety evaluation for cassava and yam producers in Nigeria

P096/F05 Margarida S. Afonso
CICS, Universidade da Beira Interior
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Instituto Politécnico de Coimbra ESTeSC, DAS
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P171/F07 Ana Rita R. Lopes
LEPAE, Faculdade de Engenharia/Universidade do Porto
Crop rotation and cropping phase in rice paddies and their relationship with variations of the soil microbial communities

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IHMT, Universidade Nova de Lisboa
Efflux inhibitors against drug resistant *mycobacterium tuberculosis*: antimicrobial agents and enhancers of macrophage killing activity
P200/F13 Inês Correia
Universidade do Porto
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CBQF, Universidade Católica Portuguesa/Porto
Combining ectomycorrhizal fungi and bacteria: a powerful tool to improve tree performance

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Craig Winstanley
University of Liverpool, UK
Pseudomonas aeruginosa population dynamics during chronic lung infections

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General Assembly **SPBT**

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Manuel Mota
Perspectives for the Future of Biotechnology and Microbiology

December 7th

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Professor Nicolau van Uden Award – Cecília Leão
Universidade do Minho
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KL04 Paula Ludovico
Universidade do Minho
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KL05 Margarida Diogo
IST, Universidade de Lisboa
Integrated platform for production and purification of human pluripotent stem cell-derived neural precursors

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KL06 Giovanna Ferrari
University of Salerno, Italy
Pulsed electric field technology: Current applications in the agro-food sector and potential use in biotechnology

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OP14 Marta Mendes
IBMC, FC, Universidade do Porto
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CICS, Universidade da Beira Interior
Purification of human papillomavirus16 e6/e7 plasmid DNA-based vaccine using an arginine modified monolithic support

Lecture Hall 2
Cost action session – EP4Bio2Med, funded by COST Action TD1104
OP22 Javier Raso
University of Zaragoza, Spain
Fundamentals of microbial inactivation by pulsed electric fields

11:40-11:55

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OP15 Carlos São-José
FF, DMI, CPM-URIA, Universidade de Lisboa,
Phageduction: a new technology for cell-targeted DNA delivery

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Requimte-CQFB, FCT, Universidade Nova de Lisboa
Bacterial sensing of key environmental parameters: structural and functional characterization of chemotaxis sensor proteins from *G. sulfurreducens*

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OP23 Valentina Ganeva
University of Sofia, Bulgaria
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IBB, IST, Universidade de Lisboa
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FCT, IMAR-CMA, Universidade de Coimbra
Natural hotspots for multiple resistances gain: arsenic resistance in heterotrophic aerobic bacteria from marine hydrothermal vents

Lecture Hall 2
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OP24 S. Šatkauskas
Vytautas Magnus University, Lithuania
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IBB, IST, Universidade de Lisboa
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FC, Universidade do Porto
Cyanobacterial diversity in microbial mats from one of the largest hypersaline coastal lagoons complex: an in-depth polyphasic approach

Lecture Hall 2
Cost action session – EP4Bio2Med, funded by COST Action TD1104
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UTC, France
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Universidade Católica Portuguesa
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P256/F15 Joana Barbosa
CESAM, Universidade de Aveiro
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P276/F16 Christian Gomes Ramos
Instituto Superior Técnico
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CESAM, Universidade de Aveiro
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P162/F20 António L. P. Amaral
Instituto Politécnico de Coimbra, Instituto Superior de Engenharia de Coimbra
Study of chemical oxygen demand and ammonia removal efficiencies by image analysis and multivariate statistics tools
P164/F21 Francisca A. Silva
CICECO, Universidade de Aveiro
New findings on the (eco)toxicity of cholinium-based ionic liquids

Lecture Hall 2
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Universidade de Minho
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P277/F17 Mónica Nunes
IHMT, Universidade Nova de Lisboa
Development of real-time PCR assays targeting the flagellin gene for the identification of *borrelia burgdorferi* sensu lato genospecies
P269/F18 Adriano Gigante
Faculdade de Farmácia, Universidade de Lisboa
The impact of LysB in mycobacteria phage-mediated lysis

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P301/F22 Ana Dias-Cabral
CICS, University of Beira Interior
Enthalpy contributions to lysozyme adsorption onto a cation-exchange support: effect of pH under linear and overloaded conditions
P291/F23 Mafalda R. Almeida
CICECO, University of Aveiro
Purification of immunoglobulin Y (IgY) using aqueous biphasic systems

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P080/F24 Bojidar Galutzov
University of Sofia, Bulgaria
Electroinduced release of recombinant laccase from *Saccharomyces cerevisiae* based on cell electropermeabilization
General Discussion

13:00–14:30

Lunch

14:30–15:20

Auditorium
Plenary Lecture – Chair: Raquel Aires Barros
S5: Bioprocess engineering
Alois Jungbauer
Univ of Natural Ressources and Life Sciences, Vienna, Austria
Continuous downstream processing, a challenge for the biochemical engineer

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IST, Universidade de Lisboa
Post-transcription regulation in bacterial pathogenesis: roles played by RNA chaperones and sRNAs

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Universidade de Aveiro
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Universidade de Aveiro
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HSRC, CICS, Universidade da Beira Interior
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DMI, CPM-URIA, FF, Universidade de Lisboa
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CICS, HSRC, Universidade da Beira Interior
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IBB, IST, Universidade de Lisboa
The genome sequence of the food spoilage yeast *zygosaccharomyces bailii* ISA1307

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IBMC, Universidade do Porto
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Faculdade de Engenharia, Universidade Católica Portuguesa
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SFSN, University College Cork, Ireland
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Universidade do Minho
Staphylococcus epidermidis biofilm lifecycle and its virulence: from plantkonic growth, to biofilm structure and systemic dissemination

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LMG, ITQB, Universidade Nova de Lisboa
High prevalence of nosocomial MRSA carriage in Luanda, Angola

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Department of Agriculture, Food and the Marine, Ireland
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CBMA, Universidade do Minho
SATP, a succinate-acetate transporter protein in *Escherichia coli*

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IBB, IST, Universidade de Lisboa
Unveiling 5-flucytosine resistance mechanisms in yeast, using chemogenomics and membrane proteomics approaches

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Auditorium

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P094/F25 Bruno Firmino Arez

LNEG, Unidade de Bioenergia

Optimization of a ssf process using invertase applied to fossil fuels biodesulfurization

P095/F26 Felisbela Oliveira

IBB, Centre of Biological Engineering, Universidade do Minho

Influence of moisture content, temperature and inoculum size on lipase production by filamentous fungi under solid-state fermentation of olive pomace

Lecture Hall 1

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P332/F30 João Menino

Life and Health Sciences Research Institute (ICVS/3Bs)

TLR9 activation dampens the early inflammatory response to *paracoccidioides brasiliensis*, impacting host survival

P331/F31 Joana Cruz

Instituto Nacional de Investigação Agrária; Center for Biodiversity, Functional and Integrative Genomics

Black rot disease in portugal: a divergent pathosystem for *Xanthomonas campestris* pv. *campestris* and galician – portuguese cabbages

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OP39 Helena Passos

DQ, CICECO, Universidade de Aveiro

A new process for the recovery and concentration of bisphenol a from human fluids

18:05–18:20

Auditorium

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P097/F27 Viviana G. Correia

CREM, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa

Characterization of the *gam* cluster of a *bacillus subtilis* gut strain

P074/F28 Zuzana Ciesarová

VÚP Food Research Institute Bratislava, Slovak Republic

Trial production of diabetic biscuits with reduced acrylamide level

P006/F29 Filipe D. R. Carvalho

CBCE, DB, IST, Universidade de Lisboa

Towards a rational approach for enzyme immobilization in a microreactor framework

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P330/F32 Carla Barradas

CESAM, DB, Universidade de Aveiro

Diversity of *Botryosphaeriaceae* species from *Eucalyptus* spp. in Portugal

P250/F33 Patrícia Branco

Laboratório nacional de energia e geologia (LNEG)

Interactions between *Saccharomyces cerevisiae* and *Hanseniaspora guilliermondii*: cell-cell contact mechanism

P278/F34 Susana R. Chaves

DB, CBMA, Universidade do Minho/IBMC, Universidade do Porto

Ceramide metabolism modulates mitochondrial outer membrane permeabilization and apoptosis

	Lecture Hall 2 Flash oral presentations P202/F35 Nuno Cerca CEB-IBB, Universidade do Minho The role of *gardnerella vaginalis* in mixed species biofilms occurrence in bacterial vaginosis and its prevalence in Portugal P359/F36 Joana S. Boura Wake Forest School of Medicine, NC, USA Gene delivery strategies to efficiently over-express functional HLA-G in bone marrow-derived mesenchymal stromal cells P360/F37 Vânia Roberto DCBM, University of Algarve Proliferative and mineralogenic activities of seaweeds and marine plants extracts in a fish *in vitro* cell system
18:30-19:20	Auditorium Plenary Lecture - Chair: Jorge Pedrosa S6: Cellular Microbiology and Pathogenesis Maria Mota FM, Universidade de Lisboa Studying malaria infections: understanding to intervene
20:30-23:00	Congress dinner

December 8th

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10:00-11:00	Coffee beak and Poster Session S4 and S7
11:00-11:25	Auditorium KL10 Gustavo Goldman USP, S. Paulo, Brazil Signal transduction mechanisms for cellulase production and glucose sensing in filamentous fungi
	Lecture Hall 1 KL11 Isabel Gordo Instituto Gulbenkian de Ciência Pathoadaptation of *Escherichia coli* to macrophages
	Lecture Hall 2 KL12 Paula Teixeira ESB, Universidade de Porto Listeriosis in Portugal: from retrospective studies to the detection of the first confirmed human outbreak

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OP40 Tony Collins
CMEB, DB, Universidade do Minho
Optimising the production of a silk-elastin-like protein in *E. coli*: overcoming acetate accumulation and plasmid instability

Lecture Hall 1
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CRM, FCT, Universidade Nova de Lisboa
Toxicity of sugar phosphates in a *Bacillus subtilis* strain defective in *araR*

Lecture Hall 2
OP44 Sónia Almeida
LMMHP, ITQB, Universidade Nova de Lisboa
Low prevalence of *Streptococcus pneumoniae* carriage among the elderly in Portugal

11:40–11:55 Auditorium
OP41 Patrícia M. R. Pereira
QOPNA, DQ Universidade de Aveiro, LPET, IBILI, FM, Universidade de Coimbra
Carbohydrate-driven porphyrinoids to induce cell demise by photodynamic therapy

Lecture Hall 1
OP43 Beatriz Oliveira
IBET
Fungal activity in untreated surface water: mycotoxins production and estrogenic activity

Lecture Hall 2
OP45 Luís Raiado-Pereira
IBB, IST, Universidade de Lisboa
Purification of pharmaceutical grade plasmid DNA by hic membrane chromatography - impact of plasmid size and process throughput

12:00–12:50 Auditorium
Plenary Lecture – Chair: José Teixeira
S8: Emergent technologies
Henk Haagsman
University of Utrecht, Netherlands
Cultured Meat

12:50–13:00 Closing ceremony and prize awards

P094/F25

OPTIMIZATION OF A SSF PROCESS USING INVERTASE APPLIED TO FOSSIL FUELS BIODESULFURIZATION

Bruno F. Arez[1]; Luís Alves[1]; José C. Roseiro[1]; Susana M. Paixão[1]

[1]*LNEG – Unidade de Bioenergia*

Biodesulfurization (BDS) can be a complementary technology to the commonly used physical-chemical process. BDS is based on the use of microorganisms for the removal of sulfur even from the most recalcitrant compounds, such as dibenzothiophene (DBT), at mild operanting conditions, making it cheaper and more eco-friendly. Knowing that our desulfurizing microorganism, *Gordonia alkanivorans* strain 1B, is a fructophilic bacterium, fact supported by an enhancement of DBT desulfurization rate during the desulfurization process using fructose or fructose-rich materials as carbon source [1, 2,3]the optimization of BDS requires the availability of fructose to the microorganism. In this context, the main goal of this work was the optimization of DBT-desulfurization by strain 1B using sucrose as carbon source and invertase through Simultaneous Saccharification and Fermentation (SSF) approach, a technique which permits the availability of fructose during the course of BDS.

The determination of optimal conditions for both sucrose hydrolysis by *Zygosaccharomyces bailii* Talf1 invertase, and *G. alkanivorans* 1B desulfurization in a SSF approach, was carried out through two experimental uniform designs accordingly to Doehlertdistribution for two factors, namely: temperature (28-38ºC) *vs* pH (5.5-7.5), maintaining the same enzyme concentration (1.16 U/g/l); and temperature(28-38ºC) *vs* enzyme concentration (0-4 U/g/l), maintaining initial pH at 7.5. The *Z. bailii* enzyme extract production and BDS assays were carried out as described by Paixão et al. 2013 [3]but using 10 g/l sucrose as carbon source and 250 mM DBT as sulfur source.

The different surface responses obtained from both experimental designs showed the importance of the 3 factors studied (pH, enzyme concentration and temperature), with factor weight varying depending on the variable studied and fermentation time. Based on 2-HBP production results, the analysis of the response surfaces obtained point out for pH 7.5, 32 ºC and 1.8 U enzyme per g/l of sucrose as the optimal conditions for BDS through SSF approach using Talf1 invertase.

Acknowledgments: The present work was financed by FEDER funds through POFC-COMPETE and by national funds through FCT – Fundação para a Ciência e a Tecnologia in the scope of project Carbon4Desulf - FCOMP-01-0124-FEDER-013932 (Ex - PTDC/AAC-AMB/112841/2009).

References:

[1] Alves L, Paixão SM (2013). *N Biotechnol* (doi:10.1016/j.nbt.2013.08.007).
[2] Silva TP, et al. (2013). *J Chem Technol Biotechnol* 88, 919-923.
[3] Paixão SM, et al. (2013). *N Biotechnol* 30, 598-606.