

approaches supported by mixtures of natural bioactive compounds should reveal more effectiveness than classical therapeutics for AD.

**Methods:** The polyphenolic profile of elderberry extract and of anthocyanin-enriched fraction was evaluated by HPLC-DAD, the optical properties by UV-vis and fluorescence spectroscopy and the redox behavior by cyclic voltammetry. Antioxidant properties were assessed in cell-free assays while the ability the elderberry extract to modulate the mitochondrial redox chain was evaluated in rat brain mitochondria.

**Results:** HPLC analyses showed that elderberry extract is a mixture of chemical compounds, particularly rich in anthocyanins. It exhibits intrinsic fluorescence properties with potential for bioimaging, reversible redox behavior and ability to scavenge DPPH, nitric oxide and superoxide radicals. The antioxidant, optical and redox properties of elderberry extract are strongly correlated to their content in anthocyanins. Bioenergetic studies show that elderberry extract has ability to promote the oxidation of NADH in aqueous phase and deliver electrons to ubiquinone or complex III in the inner-mitochondrial membrane, overcoming the complex I inhibition promoted by rotenone.

**Conclusion:** Elderberry anthocyanins have potential to be used in mitochondria-targeted formulations to modulate the pathophysiological changes underlying AD from their early stages.

**Acknowledgements:** This work received financial support from National Funds (FCT/MEC) through project UID/QUI/50006/2013, co-financed by FEDER through COMPETE, under the Partnership Agreement PT2020, and from NORTE 2020, under the PORTUGAL 2020 Partnership Agreement, through ERDF (NORTE-01-0145-FEDER-000024).

<http://dx.doi.org/10.1016/j.pbj.2017.07.066>

## PS016

### Effect of resveratrol on the cartilage and nociceptive system of Osteoarthritic animals

S. Rosas<sup>1,2,3,\*</sup>, T. Aguiar<sup>1,2,3</sup>, L. Almeida<sup>1,2,3</sup>,  
D. Nascimento<sup>1,2,3</sup>, S. Adães<sup>1,2,3</sup>,  
J.M. Castro-Lopes<sup>1,2,3</sup>, F.L. Neto<sup>1,2,3</sup>,  
J. Ferreira-Gomes<sup>1,2,3</sup>

<sup>1</sup> Department of Biomedicine - Experimental Biology Unit, Faculty of Medicine of the University of Porto, Porto, Portugal

<sup>2</sup> Pain Research Group, Institute for Molecular and Cell Biology (IBMC), Porto, Portugal

<sup>3</sup> i3S - Institute for Investigation and Innovation in Health, Porto, Portugal

E-mail address: [suu.rosas@gmail.com](mailto:suu.rosas@gmail.com)

(S. Rosas).

**Aim:** This study aims to evaluate the effect of RV on the nociceptive behavior, histopathological alterations at the knee and DRG neurons of OA rats.

**Introduction:** Osteoarthritis (OA) is a common degenerative joint disease and arthritic pain is a prominent symptom associated with reduced quality of life. Peripheral pain mechanisms seem to be involved, with cartilage lesions showing a repercussion in Dorsal Root Ganglia (DRG) neurons. Resveratrol, a polyphenol with proven anti-inflammatory, anti-oxidant and neuroprotective properties, has been shown to prevent development of OA and act as an antinociceptive agent. However, its systemic effects once the disease has fully developed remain unclear.

**Methods:** To evaluate this, OA was induced in 18 male Wistar rats through intra-articular injection of mono-iodoacetate (MIA) (day 0). Animals were allowed to develop the disease for two weeks,

after which followed a 4-week-long treatment with resveratrol or vehicle, administered intraperitoneally twice daily (10 mg/kg). Nociceptive behavior was quantified weekly using the CatWalk and Knee-Bend tests. Animals were sacrificed one week after the last treatment administration, their knees were dissected for histopathological analysis, and the DRG were dissected and processed for immunohistochemical evaluation of activating transcription factor 3 (ATF-3) neuronal expression.

**Results:** Resveratrol was unable to prevent cartilage degeneration but it significantly decreased ATF-3 expression. The nociceptive behavior of OA animals treated with resveratrol decreased during the first three weeks of treatment, in comparison to day 14 (before treatment was initiated), as shown by Knee-Bend scores. However, this tendency reverted as the disease progressed.

**Conclusion:** These results indicate that resveratrol may have antinociceptive effects in the early stages of the disease development, but it might not play such a relevant role once the disease has progressed. Thus, further studies are needed to fully understand the possible role of resveratrol in the different stages of OA.

**Acknowledgements:** The study was supported by the Chair on Pain Medicine of the Faculty of Medicine, University of Porto and by the Grünenthal Foundation – Portugal. By the time the study was conducted DN was receiving a doctoral grant (SFRH/BD/79497/2011) by Fundação para a Ciência e a Tecnologia (FCT), Portugal and SA had a doctoral grant by Fundação Calouste Gulbenkian, Portugal.

<http://dx.doi.org/10.1016/j.pbj.2017.07.067>

## PS173

### Bupivacaine treatment enhances the regeneration of the lesioned external urethral sphincter of the rat

J.P. Morais<sup>1,\*</sup>, M. Torrado<sup>2,3,4</sup>, A. Avelino<sup>2,3,4</sup>

<sup>1</sup> Escola das Ciências da Vida e Ambiente, Universidade de Trás-os-Montes e Alto Douro

<sup>2</sup> Department of Biomedicine, Experimental Biology Unit, Faculty of Medicine, University of Porto, Portugal

<sup>3</sup> Translational NeuroUrology Group, IBMC - Instituto de Biologia Molecular e Celular, Porto, Portugal

<sup>4</sup> i3S - Instituto de Investigação e Inovação em Saúde, Porto, Portugal

E-mail address: [joapfmarais@gmail.com](mailto:joapfmarais@gmail.com)

(J.P. Morais).

**Aim:** In this study we intent to verify if bupivacaine treatment can be used to enhance the repair of the lesioned urethral sphincter in rat.

**Introduction:** Stress urinary incontinence (SUI) is a major and frequent urinary dysfunction. It has been associated with external urethral sphincter (EUS) weakness due to several causes. Among them, ischemia and nerve lesion frequently associated with childbirth. The current treatments are mainly surgical but are far from being satisfactory. The local anesthetic bupivacaine is known to exert myotoxic action, followed by muscle regeneration with increased strength. This effect was already used in ocular muscles to treat strabismus. In the present study we evaluated the effect of bupivacaine application in the recovery of the damaged EUS.

**Methods:** A lesion of the external urethral sphincter (urethrol-ysis) was performed in adult female Wistar rats using established protocols. Two weeks after the lesion, the animals were injected in the EUS with 0.4 ml of 0.5% bupivacaine. Ten days later, the whole urethra was removed, fixed and sectioned in paraffin wax. Sections

