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**Aim:** This study aims to investigate the signaling pathway AMP-activated protein kinase (AMPK)-Peroxisome proliferator-activated receptor-gamma coactivator (PGC)1 $\alpha$ -sirtuin (SIRT)3 in the human corpus cavernosum (HCC) between healthy individuals and those with cardiovascular disease risk factors (CVDRF).

**Introduction:** SIRT3 is a mitochondrial NAD<sup>+</sup>-dependent protein-deacetylase involved in the regulation of cellular metabolism.<sup>1,2</sup> As a key factor in AMPK and PGC1- $\alpha$  activation in stress, the decrease in SIRT3 expression or activity is associated with diverse pathologies and aging. Actually, SIRT3 expression was found decreased in HCC of aged individuals with CVDRF.<sup>3</sup> CVDRF such as diabetes mellitus (DM), dyslipidemia, hypertension and obesity strongly associate to endothelial dysfunction, which early manifests as erectile dysfunction (ED).<sup>4</sup>

**Methods:** HCC's samples from individuals aged 40-60 years, submitted to programmed urological surgeries at Hospital São João-Porto, were divided in three groups (n=4): (1)-controls without ED or CVDRF; (2)-DM patients; and (3)-patients with three or more CVDRF including DM. Dual immunolabelling of SIRT3 and superoxide dismutase (SOD)2 with alpha-actin was carried out. As well, levels of SIRT1, SIRT3, SOD2, PGC1 $\alpha$ , NADPH oxidase (Nox)1, phospho-AMPK and AMPK were assessed by Western-blotting(WB).

**Results:** We observed SIRT3 and SOD2 expression in  $\alpha$ -actin-labelled fusiform muscle cells in all groups. The semi-quantification by WB demonstrated a significant decrease in SOD2 expression in group 3 relatively to controls, as well as, an increased tendency of Nox1 and PGC1 $\alpha$  and a decreasing trend in phospho-AMPK in groups 2 and 3. No differences in SIRT1 and SIRT3 were observed among groups.

**Conclusion:** This study suggests that CVRF including DM increase oxidative stress in HCC owing to a decrease in SOD2 expression and concomitant increment in Nox1. Further studies with an increased number of HCC samples will be necessary to elucidate the role of the AMPK-PGC1 $\alpha$ -SIRT3 signaling pathway in the response to oxidative damage.<sup>5</sup>

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## References

1. Frye RA. Characterization of five human cDNAs with homology to the yeast SIR2 gene: Sir2-like proteins (sirtuins) metabolize NAD and may have protein ADP-ribosyltransferase activity. *Biochem Biophys Res Commun.* 1999;260:273–9.
2. Schwer B, et al. The human silent information regulator (Sir)2 homologue hSIRT3 is a mitochondrial nicotinamide adenine dinucleotide-dependent deacetylase. *J Cell Biol.* 2002;158:647–57. PMC.
3. Freitas M, et al. Effects of aging and cardiovascular disease risk factors on the expression of sirtuins in the human corpus cavernosum. *J Sex Med.* 2015;12:2141–52.
4. Guay AT. ED2: erectile dysfunction = endothelial dysfunction. *Endocrinol Metab Clin North Am.* 2007;36:453–63.

5. Yu L, et al. Melatonin ameliorates myocardial ischemia/reperfusion injury in type 1 diabetic rats by preserving mitochondrial function: role of AMPK-PGC-1 $\alpha$ -SIRT3 signaling. *Sci Rep.* 2017;7.

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## PS075

### Examination of antiproliferative effects of the horseradish extracts



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**Aim:** The aim of the study was to investigate in vitro the antiproliferative effects of the horseradish juice and pulp using different solvents for the extraction.

**Introduction:** Horseradish (*Armoracia rusticana*, Brassicaceae) is a perennial herbal plant, which is widely used in human nutrition, as well as in a traditional medicine. Horseradish is a rich source of bioactive compounds such as isothiocyanates, that have proved to be significant antitumor agents.

**Methods:** Samples were prepared by the Kupchak extraction method, and the antiproliferative effects of the horseradish juice and pulp extracts were examined on the human tumor cell line MDA-MB-231 (ER-, human breast adenocarcinoma). Cell growth was determined by measuring the total protein by colorimetric sulforhodamine B assay. The obtained results (expressed as mean  $\pm$  SD) were analyzed by Tukey HSD test and the differences were considered statistically significant at  $p < 0.05$ .

**Results:** According to the IC<sub>50</sub> parameter (the concentration that inhibited the cell growth by 50%), as an important indicator of the antiproliferative effects, the most pronounced antitumor activity was observed for chloroform juice extract (IC<sub>50</sub> = 5.52  $\pm$  1.47  $\mu$ g/ml). In addition, highly potent was chloroform pulp extract (IC<sub>50</sub> = 19.44  $\pm$  3.82  $\mu$ g/ml), as well as the dichloromethane juice (IC<sub>50</sub> = 26.50  $\pm$  4.15  $\mu$ g/ml) and pulp (IC<sub>50</sub> = 26, 01  $\pm$  2.45  $\mu$ g/ml) extracts. On the other hand, significantly lower in vitro antitumor effect was noticed for the butanol pulp extract (IC<sub>50</sub> = 114.52  $\pm$  0.28  $\mu$ g/ml). IC<sub>50</sub> values for butanol juice extract, as well as water juice and pulp extracts were higher than 500  $\mu$ g/ml.

**Conclusion:** The obtained results suggest that *A. rusticana* is as a significant source of antitumor agents, especially liposoluble isothiocyanates and as such, it should be recommended for further use in a human nutrition and prevention of cancer.

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## PS080

### Contribution of the determination of numeric value of adc map in early detection of prostate cancer



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**Aim:** To define the range of ADC values for the absence of malignant disease, as well as to determine the threshold of ADC values for suspected prostate cancer.