

## Effect of the hydroalcoholic extract from *Lampaya medicinalis* Phil. (Verbenaceae) on palmitic acid-impaired insulin signaling in adipocytes.

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### Description

Female obesity is associated with menstrual disorders, infertility and recurrent miscarriages. Additionally, obesity is linked to metabolic pathologies such as dyslipidemia, Insulin Resistance (IR) and Type 2 Diabetes Mellitus (T2DM). Altered insulin function has been associated with abnormalities in female reproduction. Palmitic Acid (PA) is a saturated fatty acid with well-known IR-inducing effects in vivo and in vitro. *Lampaya medicinalis* Phil. (Verbenaceae) is a small bush that grows in the North of Chile. The infusion of the plant has been used by local ethnic groups to treat and cure diseases. The aim of this study was to assess in vitro the effect of the Hydroalcoholic Extract of *Lampaya medicinalis* (HEL) against PA-induced IR in adipocytes from the 3T3-L1 cell line.

3T3-L1 cells were in vitro-differentiated to adipocytes using a standard adipogenic cocktail. Cytotoxicity of a range of HEL concentrations (0.01 to 10 µg/ml) was evaluated in adipocytes. Cells were exposed or not to 0.1 µg/mL of HEL before adding 0.65 mM PA or vehicle and incubated with 100 nM insulin (or vehicle) for 15 min. Phosphorylation of insulin-signaling molecules (Tyr-IRS-1, Ser-Akt, Thr-AS160) was evaluated by Western blot. Glucose uptake was assessed using the 2-NBDG analogue. HEL was not cytotoxic at any concentration assessed. PA-treated adipocytes showed an impairment in insulin-stimulated phosphorylation of Tyr-IRS-1, Ser-Akt and Thr-AS160 compared to control ( $p < 0.05$ ). Interestingly, when HEL was present, proteins phosphorylation increased significantly ( $p < 0.05$ ) with respect to PA-treated adipocytes.

These findings give new insights about the effect of HEL ameliorating PA-impaired IRS-1/Akt/AS160 pathway and glucose uptake in adipocytes. A protective role for HEL against PA-induced IR is suggested, therefore *Lampaya medicinalis* may represent a promising therapeutic tool for adipocyte IR, a key component in whole body IR which is associated with impaired reproductive health.

Breast cancer has the highest incidence and mortality rates in Uruguay. Becoming familiarized with the distribution of risk

factors associated to the development of the disease facilitates the implementation of prevention strategies in everyday clinical practice which could eventually contribute to the reduction of morbidity and mortality rates. Learn about the epidemiological profile for breast cancer and the frequency of mammography controls in the surveyed population. Uruguayan women were surveyed. After applying the survey, information regarding risk and protection factors and the importance of carrying out mammography controls was provided.

Out of 182 surveyed women, the median age was 34 (18-75 years old). Excluding the fact of being female (a risk factor present in all surveyed women), 73 surveyed women (48%) presented one or two more risk factors. The majority of women older than 50 years old (58%, 87.8 %) undergo mammography controls at least once every two years.

Similar to what was reported by the national breast cancer programme, 40% of surveyed women have presented a risk factor to develop the disease. The majority of the surveyed women who were older than 50 years old underwent mammography and clinical controls at least once every two years, which shows the impact that prevention campaigns carried out by the honorary commission for the fight against cancer and the policies implemented by the ministry of public health have had on the population.

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