6TH BCNP
Brazilian Conference
On Natural Products
XXXII RESEM

Federal University of Espirito Santo
Vitória – ES/Brazil
November 05-08/2017

Persea americana Mill. (Avocado) Leaves Decrease Oxidative Stress and Produce Immunomodulatory Effect

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Persea americana Mill. (Lauraceae) is a plant from Central America (Mexico, Guatemala, Antilles), but it has shown easy adaptation to other tropical regions. Its fruits are commonly known as avocados and have an olive-green peel and thick pale yellow pulp that is rich in vegetable oils and appreciated for its sensory attributes[1]. Their leaves extract has been shown to reduce the stomach ulceration by reducing acid secretion in animals. The pathological process of gastric ulcers is characterized by an excessive inflammatory response, which stimulates defense cells to release proinflammatory cytokines and reactive species, leading to oxidative stress and can contribute to development of gastric cancer[2]. In this context, this study has as objective to evaluate the potential of hydroalcoholic extract (LCE), and hexanic (LHP) and ethyl acetate (LEAP) fractions, from *P. americana* leaves as antioxidant and immunomodulator of factors related to development of ulcers. The crude extract was obtained by turbolysis with 70% alcohol and fractionated with hexane and ethyl acetate. The antioxidant activity was determined by inhibition of synthetic radicals such as DPPH (2, 2-diphenyl-1-picrylhydrazyl) and ABTS [2, 2'-azino-bis-(3-ethylbenzothiazoline-6-sulfonic acid)], and by the ability to capture superoxide anion (O_2^-), hypochlorous acid (HOCl), hydrogen peroxide (H_2O_2) and peroxidase by guaiacol reaction[3]. Immunomodulatory effect was evaluated on RAW 246.7 macrophages culture for inhibition of nitric oxide (NO) and cytokines TNF-α, IL-6 and IL-10, quantified by ELISA assay. The results were expressed by inhibitory concentration that inhibit 50% of oxidants (IC_{50}) and percentage of inhibition. The results showed that LEAP presented higher antioxidant activity, presenting IC_{50} of 0,65 ± 0,03 µg/mL for ABTS and 4,05 ± 1,29 µg/mL for DPPH, 21,49 ± 4,43 µg/mL in the capture of O_2-, 17,83 ± 6,87 µg/mL for H_2O_2 assay and 11,53 ± 6,70 µg/mL for HOCl inhibition. In immunomodulatory activity, assay for IL-6, LEAP presented inhibition of 91,65% ± 13,43 and LCE inhibited 76,65% ± 0,01 at 100 µg/mL. LHP inhibited 41,26% ± 1,06 at 25 µg/mL. For TNF-α assay, LEAP achieved 35,26% ± 1,56 of inhibition and LCE inhibited 11,94% ± 3,75 at 100 µg/mL. In the IL-10 induction assay the samples did not product effect. In NO chemical assay, LEAP, LCE and LHP achieved inhibition of 55,90% ± 5,29, 44,01% ± 16,70 e 51,22% ± 3,13 at 100 µg/mL, respectively. For NO induction assay, the samples were not capable to induce the production of NO. In the NO inhibition assay performed on macrophages stimulated with LPS the fractions showed greater results, in concentration of 100 µg/mL, LEAP and LCE inhibited 91,0% ± 6,04 and 54,59% ± 15,54, respectively. The study showed that the leaves of *P. Americana* can inhibit the pathways involved in gastric ulcer formation. These samples are promising for further studies aimed the development of alternatives for treatment of gastric diseases.

Financial support: UFES, CNPq and FAPES

References

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