

TITLE: EVALUATION OF THE BIOLOGICAL ACTIVITIES OF THE ASSOCIATION OF β -CARIOPHYLENE AND DOCOSAHEXANOIC ACID IN EXPERIMENTAL MODELS

AUTHORS: Brito, L.F.¹; Oliveira, H.B.M.²; Selis, N. N.²; Morbeck, L.L.B.¹; Viana, J.C.S.¹; Reis, M.M.¹; Barbosa, E.N.¹; Sampaio, B. A.¹; Yatsuda, R.¹; Marques, L.M.¹

INSTITUTIONS:

1 UNIVERSIDADE FEDERAL DA BAHIA, INSTITUTO MULTIDISCIPLINAR EM SAÚDE, CAMPUS ANÍSIO TEIXEIRA. VITÓRIA DA CONQUISTA, BAHIA. (RUA HORMINDO BARROS, 58 - CANDEIAS, VITÓRIA DA CONQUISTA - BA, 45029-094)

2 UNIVERSIDADE ESTADUAL DE SANTA CRUZ. ILHÉUS, BAHIA. (CAMPUS SOANE NAZARÉ DE ANDRADE, ROD. JORGE AMADO, KM 16 - SALOBRINHO, ILHÉUS - BA, 45662-900).

ABSTRACT:

Introduction: Sepsis is a set of serious organic manifestations caused by an infection, associated with exacerbated inflammation. Cancer is a chronic non-transmissible disease characterized by disordered cell growth and exponential proliferation. Both diseases have in common high levels of oxidative stress, high rates of morbimortality and high costs to health institutions. Antioxidant substances have been evaluated for the ability to fight against sepsis and cancer, among which are the essential oils of aromatic plants, such as β -caryophyllene (BCP), and polyunsaturated fatty acids, such as Docosahexanoic Acid (DHA). **Objectives:** To evaluate the biological activities of the BCP-DHA association in experimental models of analgesia, inflammation, infection, oxidative stress and neoplasia. **Materials and methods:** The analgesic effects will be evaluated in animal models through the tests of abdominal writhing induced by acetic acid, paw edema induced by intraplantar injection of formalin and hypernociception with increasing pressure in the paw. To determine the anti-inflammatory effects, neutrophils and monocytes isolated from the peripheral blood of 5 adult male volunteers will be infected with *Staphylococcus aureus* and incubated with treatment, for subsequent cytokine dosing and gene expression analysis. The antioxidant capacity will be evaluated by the DPPH, FRAP and β -carotene methods. And the antitumor effects, with malignant colon, breast and prostate cell lines and normal lineages of mouse fibroblasts and human retinal ganglion cells, will be studied using western blot techniques, nuclear fragmentation, cell migration and cell invasion. **Preliminary results:** Analgesic effects were observed in the three models performed, when comparing the control (saline) and treated groups with BCP alone (5 mg / kg), obtaining statistical significance with $p < 0.0022$ in the test of abdominal writhings induced by acetic acid; $p < 0.0260$, $p < 0.0411$ and $p < 0.0022$, respectively, in the evaluation of paw edema, in the evaluation of flinches and paw licks in the period of 0-5 minutes and of flinches and paw licks in the period of 5-30 minutes in the intraplantar formalin injection model; and $p < 0.0041$ in the hypernociception of the von Frey test. Thus, BCP alone has been shown to have a potent analgesic effect in different models of nociceptive evaluation, increasing the resistance of the animals to the pain stimulus.

Keywords: Sepsis. Cancer. Oxidative stress. β -caryophyllene. Docosahexanoic acid. Anti-inflammatory. Antioxidant. Antitumoral.

Financing: PROAPE-CAPES, FAPESB.