



# **I. INTERNATIONAL CONGRESS ON MEDICINAL AND AROMATIC PLANTS "NATURAL AND HEALTHY LIFE"**

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**BOOK OF ABSTRACTS**



## THE EFFECTS OF MEDICINAL PLANTS ON CANCER CELL LINES AND EFFICACY OF EXPERIMENTAL ANIMAL MODEL

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### ABSTRACT

The use of medicinal plants as an alternative treatment is a historical process and has been known for a long time so that classical treatment can be more effective in wound and cancer treatment. It is important to use these products in terms of the efficiency of treatment as well as the reduction of costs. There is not enough consciousness and evidence-based information for their use and it is a major problem. The purpose of this study was to investigate the effects of plant extracts used for therapeutic purposes in cancer cell lines in vitro wound model and in vivo experimental animal model in order to obtain this information. The medicinal plants or extracts, olive (*Oleocanthal*) oil, mistletoe (*Viscum album*), common centaury (*Centaurium erythraea*), *Momordica charantia*, *Inula viscosa*, *Citrus aurantium*, thyme oil (*Thymus vulgaris*) and algae (*Jania longifurca*), were used. MCF-7, MB-MDA-231, 67NR and 4T1 for breast, NB2a for neuron cell, L929 for fibroblast and normal somatic mesenchymal stem cell for comparison were selected for in vitro wound models. As an in vivo experimental animal model, breast cancer model with 4T1 cells and skin wound healing were investigated. The effects of medicinal plants were evaluated using MTT assay for viability and proliferation, TUNEL for apoptotic cell death, and immunohistochemistry staining NOS for oxidative stress and wound TGFbeta1 for skin healing wound. The cells were photographed using phase contrast microscopy and light microscopy for cells in tissues. In terms of wound healing effects, it was found that in the in vitro wound model with (+) plus shape these extracts were beneficial effective by increasing the cell proliferation and migration in the varying the degree of the somatic normal cells. This effect was found to reduce antioxidative damage and inhibit apoptosis. Similar results was found with cancer cells for all extracts, but it was understood that depending on the type of cancer, proliferation and migration were reduced and cell death was increased. It was observed that oxidative stress and apoptosis were increased in cancer cells, but less effective in invasive cell lines. In vivo experiments showed that wound healing was accelerated and that these rates were achieved with antioxidative and antiapoptotic effects. Increased oxidative stress and apoptosis-associated cell death occurred in adenocarcinomas induced with 4T1 cells in the breast cancer model, also it was revealed that tumor growth rate was decreased by the antiproliferative effect. Only the neurotoxic effect of the algae extract was shown in the experimental animal model, which had serious clinical consequences. The use of medicinal plants both in preventive medicine and in cases where treatment is difficult is an application that should be done as a medical procedure based on scientific data. Investigation of these effects with existing techniques is very important to prevent harmful effects of insensible use. In this study, the mechanisms by which the beneficial effects of the medicinal plants used among the people are revealed and influenced. The neurotoxic algae extract proved to be very important in terms of showing the meaning of these scientific studies. The frequent use of algae, based on the beneficial effects of the vast majority of them, emphasized that this harmful effect should be kept in mind. It has

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