

INTERACTION OF BIOACTIVE COMPOUNDS WITH CERAMIC MATERIALS – A REVIEW

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Abstract. *This review examines the interaction between silymarin (SIL) and other plant-based bioactive compounds such as curcumin (CCM), piperine (PIP), resveratrol (RES), and icariin (ICA). Their combination revealed synergistic effects on colon (HCT116), breast (T47D) tumor cells, hepatocellular carcinoma, and periodontal disease. The review also addresses the interaction between these plant extracts with ceramic materials such as hydroxyapatite (HAP) and carotenoids with concrete examples of biomedical applications. Silymarin's interaction with chemotherapeutic drugs (doxorubicin-DOX, paclitaxel-PCT and 5-Fluorouracil-5-FLU) and gold nanoparticles-GNPs and silver nanoparticles-SNPs is also debated. All these combinations can form composites of major importance in the biomedical field and to contribute significantly to orthopedic surgery where materials are needed for implants that face severe infections. This short review highlights the variety of multifunctional nanoparticles that open new opportunities in cancer treatment and the need to use the Langmuir Blodgett Technique that mimics the biological membrane and provides rich medical information.*

Keywords: Silymarin, bioactive compounds, hydroxyapatite, carotenoids, chemotherapeutic drugs, gold nanoparticles, silver nanoparticles

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1. Introduction

Plants and their role in human health have recently received special attention. They have in their portfolio a wide range of biological activities with the role of protecting the organs and tissues of the body against various diseases. By using them, it has been possible to maintain a balance between controlling morbidity and regaining health. The medical system is exposed to pathogens. This means maintaining health is difficult for those hospitalized for either treatment or surgical procedures. Science through its research activities and experimental results highlights a first step in prolonging health by preventing disease and efficacy against widespread communicable diseases. In this sense, some bioactive compounds, seen in figure 1, fight against diseases since ancient times.

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