

# Oregano essential oil-loaded liposomes: Cytotoxic and Antioxidant studies

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## Introduction

Drug resistance, adverse effects, and high costs are frequently connected with current breast cancer treatment regimens, indicating the need for more effective and less harmful medicines. A growing number of researchers are looking into the potential of oregano essential oils (OEOs) to help with these problems. OEO loading into nanosystems is becoming a successful strategy due to the oil's poor bioavailability and stability. While there have been indications of improved bioactivity, no data on the cytotoxicity of EO encapsulated in various nanoformulations have been published.

## Purpose

Preparation, characterization, and assessment of OEO nanosystems' efficacy in increasing antioxidant and cytotoxic activity.

## Methods

MTT assay was used to examine the cytotoxic activity of the prepared and characterized OEO nanoformulations in human cancer cells MCF-7. DPPH scavenging activity was used to measure antioxidant activity. To improve the properties of oregano essential oil, suitable formulations of natural soybean phospholipid vesicles were created in this research. Saturated (Phospholipon 90H) and unsaturated (Lipoid S100, Phospholipon 85G) phospholipids, in combination with cholesterol, were used to prepare oregano essential oil loaded liposomes using the ethanol injection method.

## Results

Based on the findings, it appears that OEO nanoformulations may be more exhibits significant cytotoxic activity in breast cancer cell lines in comparison to free form of the essential oil.

## Conclusion

The successful development of OEO nanosystems that significantly enhance OEO's cytotoxic and antioxidant properties demonstrates a viable technique for a promising successful therapeutic approach.

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