



## KEY WORDS

- ✓ Breast Cancer
- ✓ Exosome
- ✓ Drug Delivery System
- ✓ Tamoxifen
- ✓ miR-342

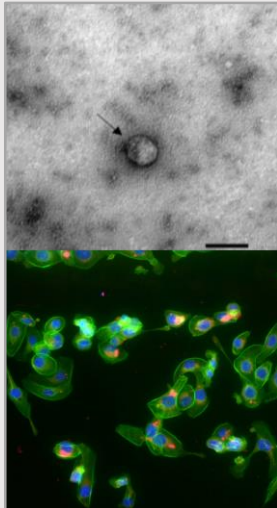
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## INVESTIGATION OF THE EFFECT OF microRNA ENRICHED DRUG LOADED EXOSOMES ON TAMOXIFEN RESISTANCE IN BREAST CANCER TREATMENT

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## THESIS ABSTRACT

The objective of this study was to investigate the potential therapeutic effects of mesenchymal stem cell (MSC)-derived exosomes, enriched with specific cargo contents, in overcoming drug resistance to tamoxifen in ER+ breast cancer treatment. The current study identified that exosomes enriched with tamoxifen and miR-342 positively influenced the drug's mechanism of action in ER+ breast cancer cells, demonstrating effectiveness at lower doses. The use of exosomal natural vesicles, enriched with specific cargo contents as a targeted drug delivery system, has been determined to have potential therapeutic effects in overcoming resistance developed against endocrine therapy. Additionally, it was determined that exosomes derived from breast cancer cells offer a new and effective therapeutic approach by suppressing NETosis in both MCF7 and MCF7-Tam1 cells.

## APPLICATION AREAS OF THE THESIS RESULTS

The current thesis results provide a potential therapeutic approach for the treatment of patients developing tamoxifen resistance in ER+ breast cancer. Additionally, they demonstrate that exosomes can be effectively used as a drug delivery system.

## ACADEMIC ACTIVITIES

- 1-TGA-2021-198. Meme Kanseri Tedavisinde mikroRNA ile Zenginleştirilmiş İlaç Yüklü Ekzozomların Tamoksifen Direnci Üzerine Etkisinin İncelenmesi. Araştırmacı.
- 2-TÜBİTAK 1002-B Hızlı Destek Programı. mikroRNA ile zenginleştirilmiş mezenkimal kök hücre kaynaklı ilaç yüklü ekzozomların tamoksifen dirençli MCF7-TAM1 hücrelerindeki etkinliğinin floresan yöntemler ile incelenmesi. Yürütücü
- 3-2022-A3-DR/TUS-04. Proje no: 30974. Meme Kanseri Primer Tümörlerinden Orjinenen Ekzozomlarda Netosis Kaynaklı Biyobelirteçlerin İlaç Direnci ve Metastaz Üzerine Etkisinin Araştırılması. Yürütücü.
- 4-Havva Tezcan Ünlü, Gülşah Çeçener, Ufuk Ünal, Derya Sağraç, Oğuz Kaan Kırbaş, Pakize Neslihan Taşlı, Ünal Egeli, Fikrettin Şahin. 4-Hidroksitamoksifen Yüklü Mezenkimal Kök Hücre Kaynaklı Ekzozomlar, Tamoksifene Dirençli MCF 7-TAM1 Meme Kanseri Hücrelerinde PI3K/MAPK ve Hippo Yolaklarının İnhibisyonunda Rol Oynar. 18.Tıbbi Biyoloji ve Genetik Kongresi. 26-29 Ekim 2023. Holiday Inn Hotel, ANKARA.
- 5-Havva Tezcan Unlu, Gulsah Cecener, Unal Egeli. Investigation of the Effect of miR-342 Loaded Exosomes Derived from Mesenchymal Stem Cells on Tamoxifen-Resistant Breast Cancer Cells. XXVII SCHOOL OF PURE AND APPLIED BIOPHYSICS. Extracellular vesicles: from biophysical to translational challenges. Venice, February 6-10, 2023.