



KEY WORDS

- ✓ 4T1
- ✓ EMT/MET
- ✓ Cromolyn Sodium
- ✓ Mast Cells
- ✓ Breast Cancer

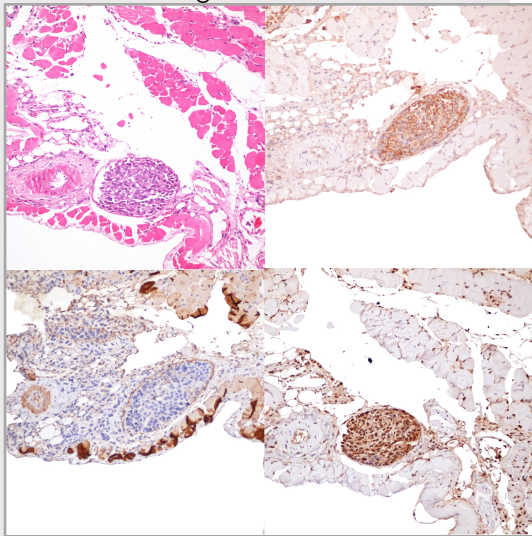
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INVESTIGATION OF THE POSSIBLE ROLES OF MAST CELLS IN THE EPITHELIAL-MESENCHYMAL TRANSITION (EMT) PROCESS IN AN EXPERIMENTAL 4T1 MAMMARY CARCINOMA METASTASIS MODEL IN MICE

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THESIS ABSTRACT

This study investigated the role of mast cells in the tumor microenvironment and EMT/MET-related processes in female BALB/c mice bearing orthotopic 4T1 mammary carcinomas. Mast cell responses were modulated with stem cell factor (SCF) and cromolyn sodium (CR). Primary tumors and distant organs were assessed histopathologically, histochemically, and immunohistochemically, and sera were analyzed by ELISA. SCF treatment was associated with increased mast cell counts, degranulation, tryptase/chymase positivity, microvessel density, and selected metastatic parameters. Mast cell activation and some metastatic findings were less pronounced with CR. These findings suggest that mast cells may contribute to tumor size and the formation of the metastatic microenvironment.

APPLICATION AREAS OF THE THESIS RESULTS

This thesis presents an integrated approach to evaluating mast cell responses alongside the tumor microenvironment, neovascularization, and metastatic spread in an experimental mammary cancer model. Mast cell density, degranulation, tryptase/chymase positivity, and CD31-positive microvessel density may serve as comparative endpoints in future preclinical studies. The findings provide a basis for further investigation of strategies targeting SCF-mediated mast cell responses and cromolyn sodium-mediated mast cell stabilization. Validation in other tumor models and human tissues may help identify novel biomarker combinations that reflect treatment response and disease course.

ACADEMIC ACTIVITIES

- Investigation of the effects of mast cells on metastasis through the epithelial-mesenchymal transition (EMT) process in metastatic and non-metastatic mouse mammary cancer models. TÜBİTAK 1001 – The Scientific and Technological Research Projects Funding Program, Project No. 223O266.
- Önder, C., Önder, C., Akesen, S., Yumuşak, E., & Akesen, B. (2024). Riluzole is effective on spinal decompression for treating acute spinal injury when compared with methylprednisolone and the combination of two drugs: In vivo rat model. *Global Spine Journal*, 14(7), 1899–1908.

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