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IUPAC 2025
Kuala Lumpur, Malaysia

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Kuala Lumpur Convention Centre, Malaysia

53rd IUPAC General Assembly (53GA)
12th - 16th July 2025

50th World Chemistry Congress (50WCC)
14th - 19th July 2025

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APREPITANT-LOADED PLGA NANOPARTICLES FOR LUNG CANCER: PHARMACEUTICAL AND ANTI-CANCER PERSPECTIVES

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Abstract
Polymeric nanoparticle-based drug delivery systems have gained attention in cancer therapy due to their ability to improve drug solubility, stability, and tumor-specific accumulation. PLGA (poly(lactic-*co*-glycolic acid)) nanoparticles, approved by both the FDA and EMA, are particularly promising due to their biocompatibility, biodegradability, and controlled drug release properties. Lung cancer is the second most common cancer type worldwide and remains a leading cause of cancer-related mortality. Despite advances in targeted therapies, chemotherapy remains a primary treatment strategy, though its efficacy is limited by severe side effects and frequent dosing. Innovative drug delivery systems are being developed to enhance therapeutic efficacy while reducing systemic toxicity.[1] In Aprepitant, an FDA-approved neurokinin-1 (NK-1) receptor antagonist used for chemotherapy-induced nausea and vomiting, was encapsulated into PLGA nanoparticles via the nanoprecipitation method. These nanoparticles were characterized according to ICH and FDA guidelines, ensuring compliance with regulatory standards for cancer therapeutics. The anti-cancer potential of aprepitant-loaded nanoparticles was evaluated in A549 human lung cancer cells using real-time cell analysis. Migration and invasion assays were performed in a co-culture model with M2c-polarized THP-1 macrophages to assess their anti-metastatic effects.[2-4] The IC_{50} values of free aprepitant and aprepitant-loaded nanoparticles were 126 µg/ml and 105 µg/ml at 24 hours, and 107 µg/ml and 93.4 µg/ml at 48 hours, respectively. Migration increased by 40.44% in the M2c group but was reduced by 11.38% with aprepitant and 31.72% with aprepitant-loaded PLGA. Invasion rates rose by 59.72% in the M2c group but decreased by 35.47% and 64.99% with aprepitant and aprepitant-loaded PLGA, respectively. Aprepitant-loaded PLGA nanoparticles significantly reduced migration and invasion in lung cancer cells, demonstrating their potential to enhance anti-cancer efficacy while minimizing side effects. This work has been supported by Anadolu University Scientific Research Projects Coordination under grantt number BGT-2024-2344 / ID: 2344.

Keywords: Aprepitant, Nanoparticles, PLGA, Pharmaceutical analysis.

References
1. Baghirova, L.; Kaya-Tilki, E.; Öztürk, A.A. *ACS Omega*, **2023**, *8*, 2658-2668.
2. Solak, B.; Soyer, P.; Kaya-Tilki, E.; Öztürk, A.A. *J. Drug. Deliv. Sci. Technol.*, **2025,** *106721*.
3. Kaya-Tilki, E.; Öztürk, A.A.; Engür-Öztürk, S.; Dikmen, M. *Sci. Rep.*, **2024**, *14*, 19837.
4. Öztürk, A.A.; Kaya-Tilki, E.; Güven, U.M.; Kıyan, H.T. *Curr. Drug. Deliv.,* **2023**, *20*, 830-840.

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