

PLENARY PRESENTATIONS

THE COSMECEUTICAL PHARMACOGNOSY: TRENDS, EVIDENCE, AND INNOVATION

Ilkay Erdogan Orhan^{1,2}

¹Department of Pharmacognosy, Faculty of Pharmacy, Lokman Hekim University,
06510 Ankara, Türkiye

²Turkish Academy of Sciences (TÜBA), Vedat Dalokay Cad., No. 112, 06670, Ankara,
Türkiye

Natural cosmetics are characterized by their integration of environment-derived ingredients, specifically plants and minerals. A distinct subset within this domain is cosmeceuticals, which incorporate bioactive compounds capable of delivering therapeutic advantages for skin wellness. Unlike conventional cosmetics, these formulations target functional enhancements to the skin rather than providing basic moisture or superficial aesthetic updates. Concurrently, the personal care industry is experiencing a contemporary shift toward nanocosmetics driven by the implementation of nanotechnology. Because they refine the delivery mechanisms and overall efficacy of active components, these advanced formulations are becoming essential. Nanocarriers, in particular, encapsulate ingredients to guarantee precise localized delivery, which optimizes therapeutic outcomes and minimizes the risk of skin irritation. Furthermore, this innovative technology enables the formulation of multi-purpose products designed to concurrently tackle aging, hydration, and UV protection. The core of our research centers on engineering original, plant-based cosmeceuticals by systematically evaluating botanical extracts and isolated molecules. This screening pipeline incorporates *in silico* docking models, *in vitro* enzyme inhibition assays, and cell culture experiments to pinpoint high-potential candidates. Notably, our efforts have yielded major advancements by embedding *Cotinus coggygria* into sophisticated delivery frameworks, including niosomes, nanofibers, and nanoemulgels. Additionally, our laboratory successfully designed polycaprolactone (PCL) electrospun nanofibers integrated with both hyaluronic acid and *C. coggygria* tailored for medical wound recovery. This presentation will highlight our most recent breakthroughs in the engineering of these botanical cosmeceutical systems.

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