

पेटेंट कार्यालय
शासकीय जर्नल

**OFFICIAL JOURNAL
OF
THE PATENT OFFICE**

निर्गमन सं. 49/2024
ISSUE NO. 49/2024

शुक्रवार
FRIDAY

दिनांक: 06/12/2024
DATE: 06/12/2024

पेटेंट कार्यालय का एक प्रकाशन
PUBLICATION OF THE PATENT OFFICE

(54) Title of the invention : DEVELOPMENT OF COSMETIC PREPARATION BEARING ESSENTIAL OILS FOR AGE DEFYING AND ANTIMICROBIAL ACTIVITY

(51) International classification :A61Q0019000000, A61K0008340000, A61Q0019080000, A61Q0017040000, A61K0008978900

(86) International Application No :NA
 Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
 Filing Date :NA

(62) Divisional to Application Number :NA
 Filing Date :NA

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(57) Abstract :
 The present invention relates to a crosslinked chitosan/alginate dialdehyde (ADA) hydrogel incorporating nanoemulsion-based delivery systems for enhanced antimicrobial, anti-aging, and photoprotective properties, suitable for cosmeceutical and therapeutic applications. The hydrogel composition includes 20% w/w ADA as a crosslinking agent, 1% w/w calcium chloride for structural stability, 2% w/w glycerin as a humectant, 35% w/w water as the primary solvent, 4% w/w chitosan for film-forming and wound-healing effects, and 0.25% w/w andrographolide for anti-inflammatory and antimicrobial activity. The essential oil component comprises either tea tree oil (TTO) or rosemary oil (RMO) in a nanoemulsion form at concentrations of 2%, 4%, or 6% w/w to enable sustained release and enhance therapeutic efficacy. This formulation exhibits confirmed photoprotective and anti-aging benefits, providing prolonged skin protection, antimicrobial resistance, and anti-inflammatory action, ideal for applications in skincare.

No. of Pages : 29 No. of Claims : 9