पेटेंट कार्यालय
शासकीय जर्नल

OFFICIAL JOURNAL
OF
THE PATENT OFFICE

निर्गमन सं. 12/2025	शुक्रवार	दिनांक: 21/03/2025
ISSUE NO. 12/2025	FRIDAY	DATE: 21/03/2025

पेटेंट कार्यालय का एक प्रकाशन
PUBLICATION OF THE PATENT OFFICE

(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :12/03/2025
(21) Application No.202511022269 A
(43) Publication Date : 21/03/2025

(54) Title of the invention : SYNTHESIS, CHARACTERIZATION, AND ANTI-INFLAMMATORY EVALUATION OF NOVEL COUMARIN DERIVATIVE

(51) International classification	:A61P0029000000, C07D0311160000, C09B0057020000, C07D0311120000, C07D0311460000
(86) International Application No Filing Date	:NA :NA
(87) International Publication No	: NA
(61) Patent of Addition to Application Number Filing Date	:NA :NA
(62) Divisional to Application Number Filing Date	:NA :NA

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(57) Abstract :
The present invention relates to the synthesis, characterization, and anti-inflammatory evaluation of novel coumarin derivatives. A three-step synthetic pathway was employed to obtain the final Schiff base compound, starting with the preparation of 7-hydroxy-4-methyl coumarin, followed by formylation to yield 8-formyl-7-hydroxy-4-methyl coumarin, and concluding with the formation of an aromatic Schiff base derivative through condensation with 4-chloroaniline. The synthesized compounds were characterized by melting point, TLC, Rf values, FT-IR, Mass spectrometry, and ^1H NMR spectroscopy. The anti-inflammatory potential of the derivatives was evaluated using in-vitro albumin denaturation assays and in-vivo carrageenan-induced paw edema models. Acute toxicity studies were also performed in accordance with OECD guidelines to ensure safety. The study suggests that coumarin derivatives possess promising anti-inflammatory properties and can serve as a structural template for the development of safer and more effective therapeutic agents in the future.

No. of Pages : 13 No. of Claims : 8