

## THE IMPORTANCE OF COLCHICINE AND ITS THERAPEUTIC APPLICATIONS IN DERMATOLOGY

Allaev Otabek

International Sakharov Environmental University Minsk, Belarus

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Colchicine has been primarily recognized for its use in gout and familial Mediterranean fever (FMF), but its broader anti-inflammatory and immunomodulatory effects have drawn attention to its potential in dermatology. Dermatological disorders, particularly those involving immune dysregulation and chronic inflammation, have demonstrated responsiveness to colchicine therapy. This thesis will evaluate the mechanisms underlying colchicine's dermatological applications, summarize its current uses, and discuss future potential as an adjunct or alternative to more traditional treatments.

Colchicine exerts its effects by disrupting microtubule assembly, which impacts numerous cellular processes. In dermatology, the drug's anti-inflammatory actions are particularly significant:

**Microtubule Inhibition:** By inhibiting tubulin polymerization, colchicine interferes with the movement and function of leukocytes, key drivers in inflammation. This results in decreased chemotaxis and motility of neutrophils and lymphocytes, reducing inflammatory responses in various dermatological conditions.

**Inflammasome Inhibition:** Colchicine inhibits the activation of the NLRP3 inflammasome, which is involved in the pathogenesis of several inflammatory diseases, including those affecting the skin.

**Modulation of Cytokine Release:** Colchicine diminishes the release of pro-inflammatory cytokines, including IL-1 $\beta$ , TNF- $\alpha$ , and IL-6, which are implicated in numerous skin diseases.

**Established Dermatological Applications of Colchicine:** Psoriasis, Behçet's disease, Leukocytoclastic and hidradenitis suppurativa vasculitis are chronic inflammatory skin diseases with immune-mediated mechanisms. Colchicine has demonstrated efficacy in managing those disorders due to its anti-inflammatory properties, particularly in pustular and erythrodermic forms of the disease. By reducing neutrophil migration and modulating the inflammatory cascade, colchicine helps in controlling them.

The role of colchicine in dermatology is evolving. Ongoing clinical trials are investigating its efficacy in a broader range of skin conditions, including atopic dermatitis and chronic urticaria. Combination therapies involving colchicine and biologics may also enhance its effectiveness while minimizing side effects. Additionally, further elucidation of its molecular targets in the skin will help optimize its use in inflammatory dermatoses.

Colchicine's unique anti-inflammatory and immunomodulatory actions make it a valuable therapeutic agent in dermatology. While its use in dermatological practice is not as widespread as in rheumatology, its efficacy in treating various inflammatory skin diseases continues to be substantiated by clinical research. Future studies are likely to expand its indications and refine its therapeutic potential in the management of skin diseases