

Letter to the Editor

One friend among foes; anti-malarial drug artesunate as a novel addition to anti-psoriasis weaponry

Dear Editor,

Psoriasis is chronic autoimmune hyper-proliferative skin disorder occurred due to the overproduction of some cytokines secreted by infiltrating CD4 (+) and CD8 (+) T cells and natural killer cells¹. Although anti-malarial is one of the most common medications known to trigger or worsen existing psoriasis² by various mechanisms such as break in the epidermal barrier by inhibiting epidermal transglutaminase activity and enhancing hyper proliferation and irregular keratinization¹, but we hypothesized in this paper that anti-malarial drug artesunate by various molecular mechanisms and special biochemical properties may attenuate psoriasis. This manuscript aimed to enlighten our colleagues regarding the potential therapeutic value of artesunate in the treatment of psoriasis to encourage the research on this agent.

Psoriasis is a common chronic recurring proliferating inflammatory disease usually involves extensor surfaces which is characterized by T helper cell type 1 cytokine pattern⁴. In the other word, T helper-1 (Th1) cytokines are elevated in psoriatic lesions⁵. Importantly, Pro-inflammatory cytokines, such as tumor necrosis factor (TNF)- α have a crucial role in the pathophysiology of psoriasis⁴. Additionally, IL-6, IL-8 and IL-17 are cytokines involved in its pathogenesis⁵. IL-33 play a role in psoriasis-like plaque inflammation and its targeting may provide a new treatment strategy for psoriasis⁷. Notably, Vascular Endothelial Growth Factor (VEGF) mediates angiogenesis and it is responsible for new blood vessels formation in psoriatic lesions^{8,9}. There is also association between psoriasis activity and serum VEGF concentrations, which can be an indicator of the disease severity⁸. Accordingly, many VEGF antagonists have the potential to treat psoriasis⁹.

The most important new class of antimalarial agents are artemisinins (chemical products from *Artemisia annua* L.) Although the mechanisms of action of artemisinins are not well known, they may include free-radical production in the parasite food vacuole and inhibition of a parasite calcium ATPase¹⁰. Artesunate and its derivatives for their anti-inflammatory and immunomodulatory effects have been proven in the treatment of systemic lupus erythematosus, rheumatoid arthritis and allergic contact dermatitis with low adverse-effects^{11,12}. Artesunate suppresses TNF- α expression *in vitro* and *in vivo* as well as T-helper (Th)1/Th17 responses in rat colitis model. Furthermore, artesunate treatment is significantly inhibited TNF- α production by LPS-activated macrophages¹³. Notably, it attenuates eosinophilia, IL-17 and IL-33 in lung tissues and ameliorates experimental allergic airway inflammation, probably via down regulation of NF- κ B activity¹². Interestingly artesunate directly inhibits endothelial cell proliferation by VEGF inhibition and decreasing the VEGF receptors and induction of apoptosis in endothelial cells¹⁴. Additionally it decreases the secretion of IL-6 and IL-8 from TNF- α stimulated fibroblast – like synoviocytes in a dose – dependent manner¹⁵ and diminishes mitogen-induced lymphocyte proliferation and activation¹⁶.

Taking all the above facts together, we suggest that due to its potent inhibitory effect on TNF- α , (Th)1/Th17, IL-17, IL-33, IL-6, IL-8, VEGF expression and receptors and induction of apoptosis, artesunate can be considered as a novel addition to the anti-psoriasis weaponry. As another advantages artesunate has rectal and parenteral forms in addition to the oral form¹⁷ and its inhibition of certain viruses such as HCV and HBV can be very important as the use of immunosuppressives may be hazardous in affected psoriasis patients¹⁸. Our commentary justifies and encourages the conduction of clinical trials on this subject.

Conflict of Interest

The Authors declare that they have no conflict of interests.

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