Psoriasis Pharmacology

Psoriasis treatment targets immune-mediated keratinocyte hyperproliferation through systemic immunosuppressants, topical therapies, and biologic antibody agents. Traditional systemic agents include Cyclosporine, a calcineurin inhibitor that suppresses T-cell activation, and Methotrexate, a folate antagonist that inhibits DNA synthesis and reduces inflammatory cytokine production. Topical agents (e.g., corticosteroids, vitamin D analogs, retinoids) reduce local inflammation and epidermal proliferation in mild to moderate disease. Biologic therapies target specific immune pathways: TNF-? inhibitors (Infliximab, Adalimumab, Etanercept) decrease systemic inflammation; IL-12/23 inhibitor (Ustekinumab) and IL-23 inhibitor (Guselkumab) block upstream cytokine signaling; and IL-17 pathway inhibitors (Ixekizumab, Secukinumab, Bimekizumab) directly suppress IL-17–mediated keratinocyte activation. These agents provide targeted immunomodulation for moderate to severe plaque psoriasis.



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Cyclosporine
Cycle-spear-gun
Cyclosporine is a calcineurin inhibitor that binds cyclophilin. It inhibits IL-2 transcription, leading to reduced T-cell activation; T-cells are key mediators in the pathogenesis of psoriasis.

Methotrexate
Moth-T-Rex-ate
Methotrexate is a folate antimetabolite that competitively inhibits dihydrofolate reductase, reducing DNA synthesis. It also has anti-inflammatory effects through increased adenosine signaling. Methotrexate is used in moderate to severe psoriasis or when topical therapies fail.

Topical Agents
Topical Agent
Topical agents used to treat psoriasis are corticosteroids, tacrolimus, tazarotene, and vitamin D analogs. It is effective in mild to moderate psoriasis, with less than 5% of the body surface affected, sparing the genitals, hands, feet, and face.

**Antibody Therapy
**

Infliximab
N-flicks
TNF-? is a proinflammatory cytokine involved in the pathogenesis of psoriasis. Inhibiting TNF-? helps treat moderate to severe psoriasis, defined as affecting >5% of body surface area or involving the hands, feet, face, or genitals. Infliximab is a TNF-? inhibitor that binds both soluble and transmembrane TNF-? and provides one of the most rapid clinical responses among biologic therapies.

Adalimumab
A-Dali-mummy
Adalimumab is another example of a TNF-? inhibitor that targets soluble TNF-?. Patients should also be screened for TB, the PPD tuberculin test due to the risk of TB reactivation. This is also indicated in patients using infliximab.

Etanercept
E-tan-nurse Intercepter
Etanercept acts by blocking the interaction between TNF and its receptor. It can be used as a treatment option to treat moderate to severe psoriasis.

Guselkumab
Goose-elephant
The IL-23/IL-17 axis is currently thought to be involved in the principal pathogenic pathway in psoriasis. Guselkumab is the first drug in its class, an IL-23 blocker, to be approved by the FDA as a treatment option for moderate-severe plaque psoriasis.

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Bimekizumab

Barbeque-man

Bimekizumab is an inhibitor of interleukin 17A and 17F, and refers to immuinoglobulin monoclonal antibody used to treat moderate and severe plaque psoriasis.

Ustekinumab

US-Tech-man

Psoriasis patients are found to respond to treatment that interferes with lymphocyte activation, the tumor necrosis factor (TNF) pathway, agents blocking interleukin (IL)-17, or the IL-12/23p40 subunit.
Ustekinumab is a fully human immunoglobulin G1? (IgG1?) monoclonal antibody that targets the p40 subunit shared by IL-12 and IL-23.

Ixekizumab

Exit-man with I-shaker

Ixekizumab is an IL-17A antagonist used to treat moderate to severe plaque psoriasis. It should be avoided in patients with inflammatory bowel disease.

Secukinumab

Second (2nd)-man

Secukinumab is an IL-17A antagonist used to treat moderate to severe plaque psoriasis.

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