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# An Overview of Biologics for Psoriasis

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## INTRODUCTION

The use of biologics has revolutionized the treatment of psoriasis but choosing the right agent could be challenging. Currently, there are multiple biologic options, each with advantages and disadvantages. This table is an overview of the relevant pharmacological properties, efficacy data, and considerations pertaining to patients' comorbidities to take into account when selecting a biologic.

## TABLE

| | MOA[1] | Route[1] | Dose + Frequency[1] | FDA-Approved Indications[1] | Time to See Response[1] | Pros in Psoriasis[1] | Pros Overall | Cons[1] | Comorbidities in Which to Use[1-3] | Comorbidities in Which to Avoid[1-3] | PASI 75 SCORE [1] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Etanercept (Enbrel) | TNF-α Inhibitor | SQ -Fixed dosing | 50mg 2x/week for 12 weeks, then 50mg weekly | - PsO<br>- PsA<br>- AS<br>- RA<br>- JIA | 12–16 weeks | - Approved for patients ≥ age 4yrs<br>- Scalp + nail PsO<br>- Erythrodermic PsO<br>- Palmoplantar PsO<br>- Pustular PsO | - Anti-drug Abs not associated with loss of efficacy[1] | - Frequent SQ dosing<br>- Slower onset of action compared to newer medications[4]<br>- May worsen IBD[5] | - IBD+ (EXCEPTION: Etanercept)<br>- CVD+<br>- HBV*, HCV**<br>- HIV*** | - MS (CI)<br>- CHF Class III or IV (CI)<br>- Concurrent or prior malignancy | At week 12:<br>- 49% if 50mg twice per week<br>- 33% if 50mg weekly |
| Adalimumab (Humira) | TNF-α Inhibitor | SQ -Fixed dosing | 80mg at week 0, 40mg at week 1, then 40mg q2 weeks | - PsO (adults)<br>- PsA<br>- AS<br>- RA<br>- IBD<br>- JIA<br>- HS<br>- Uveitis | | - Scalp + nail PsO<br>- Erythrodermic PsO<br>- Palmoplantar PsO<br>- Generalized pustular PsO | - Approved for adult and pediatric Crohn's[1] | - Frequent SQ dosing<br>- Loss of efficacy via anti-drug Abs | | | At week 16:<br>- 71% |
| Infliximab (Remicade) | TNF-α Inhibitor | IV -Weight-based dosing | 5mg/kg at weeks 0, 2, 6, then q8 weeks | - PsO<br>- PsA<br>- AS<br>- RA<br>- IBD | 8–10 weeks | - Scalp + nail PsO<br>- Erythrodermic PsO<br>- Palmoplantar PsO<br>- Palmoplantar pustular PsO<br>- Generalized pustular PsO | - Approved for adult and pediatric IBD[1] | - IV administration<br>- Loss of efficacy via anti-drug Abs (prevention= MTX)<br>- Infusion reactions | | | At week 10:<br>- 75.5% if dosed at 5mg/kg<br>- 70.3% if dosed at 3mg/kg |
| Certolizumab (Cimzia) | Pegylated TNF-α Inhibitor | SQ -Fixed dosing | - 400mg (as 2 200mg injections) q2 weeks<br>- If ≤90kg: 400mg (as 2 200mg injections) at weeks 0, 2, 4, then 200mg q2 weeks | - PsO<br>- PsA<br>- AS<br>- RA<br>- Crohn's | 12–16 weeks | - May be used in pregnancy- minimal crossing of placental barrier[6,7] | - Increased T1/2 | - Frequent SQ dosing | | | At week 12:<br>- 75% if 200mg q2 weeks<br>- 83% if 400mg q2 weeks |
| Ustekinumab (Stelara) | IL-12 and IL-23 Inhibitor | SQ -Weight-based dosing | - If ≤100kg: 45mg at weeks 0 and 4, then q12 weeks<br>- If >100kg: 90mg at weeks 0 and 4, then q12 weeks<br>- If age 12–17yrs and <60kg: 0.75mg/kg at 0 and 4, then q12 weeks | - PsO<br>- PsA<br>- Crohn's | 12 weeks | - Approved for patients ≥ age 12yrs<br>- Scalp + nail PsO<br>- Erythrodermic PsO<br>- Palmoplantar PsO<br>- Palmoplantar pustular PsO<br>- Annular pustular PsO<br>- Generalized pustular PsO | - q3mos dosing | - Less effective than TNF-α inhibitors for PsA<br>- Loss of efficacy via anti-drug Abs | - IBD+<br>- Obesity+<br>- CHF+<br>- MS<br>- HBV*, HCV**<br>- HIV*** | | At week 12:<br>- 66.7-67.1% if 45mg dose<br>- 66.4-75.7% if 90mg dose |
| Guselkumab (Tremfya) | IL-23 Inhibitor | SQ | 100mg at weeks 0 and 4, then q8 weeks | - PsO<br>- PsA[8] | 12 weeks | - Scalp + nail PsO<br>- Palmoplantar PsO | - q2mos dosing<br>- Neutralizing anti-drug Abs not associated with loss of efficacy or injection-site reactions[1] | - Slower onset of action + clinical improvement compared to IL-17 inhibitors[9] | - IBD<br>- Obesity+<br>- CHF+<br>- HIV*** | | At week 16:<br>- 86.3[10]<br>- 91.2%[11] |

**TABLE (CONTINUED)**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Tildrakizumab (Ilumya) | IL-23 Inhibitor | SQ | 100mg at weeks 0 and 4, then q12 weeks | - PsO | | | - q3mos dosing | - Slower onset of action + clinical improvement compared to IL-17 inhibitors[9]<br>- Loss of efficacy via neutralizing anti-drug Abs | | | At week 12:<br>- 61% if 100mg dose<br>- 66% if 200mg dose |
| Risankizumab (Skyrizi) | IL-23 Inhibitor | SQ | 150mg at weeks 0 and 4, then q12 weeks | - PsO[12] | | | - q3mos dosing | - Slower onset of action/clinical improvement compared to IL-17 inhibitors[9] | | | At week 12:<br>- 63% if 18mg dose<br>- 98% if 90mg dose<br>- 88% if 180mg dose[13] |
| Secukinumab (Cosentyx) | IL-17A Inhibitor | SQ | 300mg weekly at weeks 0–4, then q4 weeks | - PsO (adults)<br>- PsA<br>- AS<br>- Non-radiographic axial spondylo-arthritis[14] | 12 weeks | - Scalp + nail PsO<br>- Erythrodermic PsO<br>- Palmoplantar PsO<br>- Generalized pustular PsO<br>- Neck PsO | - Rapid onset of action[4]<br>- Maintenance of response at 52 weeks of q4 week dosing<br>- Neutralizing anti-drug Abs not associated with loss of efficacy[1] | - May worsen IBD[15]<br>- Increased infection risk<br>- Risk of mucocutaneous Candida infections | - Obesity*<br>- CHF*<br>- MS<br>- HBV*, HCV**<br>- HIV*** | IBD (May worsen) | At week 12:<br>- 71.6-77.1% if 150mg dose<br>- 77.1-81.6% if 300mg dose |
| Ixekizumab (Taltz) | IL-17A Inhibitor | SQ | - Initial: 160mg at week 0, then 80mg q2 weeks from weeks 2–12<br>- Maintenance: 80mg q4 weeks<br>- Some may require 80mg q2 weeks | - PsO<br>- PsA<br>- AS<br>- Non-radiographic axial spondylo-arthritis[16] | | - Approved for patients ≥ age 6yrs<br>- Scalp + nail PsO<br>- Erythrodermic PsO<br>- Palmoplantar PsO<br>- Generalized pustular PsO<br>- Inverse PsO<br>- Genital PsO | - Rapid onset of action[4] | - May worsen IBD[15]<br>- Increased infection risk<br>- Risk of mucocutaneous Candida infections<br>- Loss of efficacy via neutralizing anti-drug Abs | | | At week 12:<br>- 84.2% |
| Brodalumab (Siliq) | IL-17RA Antagonist | SQ | - Initial: 210mg weekly at weeks 0–2<br>- Maintenance: 210mg q2 weeks | - PsO | | - Scalp + nail PsO<br>- Erythrodermic PsO<br>- Generalized pustular PsO | - Rapid onset of action[4]<br>- No neutralizing anti-drug Abs[1] | - May worsen IBD[15]<br>- Increased infection risk<br>- Risk of mucocutaneous Candida infections<br>- BBW: suicidal ideation and behavior[17] | | | At week 12:<br>- 67-69% if 140mg dose<br>- 85-86% if 210mg dose |

*Preferred
†If active HBV infection (HBsAg+), may require concurrent antiviral treatment and specialist evaluation. If cleared infection (anti-HBc+), no need for close follow-up; will only require regular monitoring for reactivation with HBsAg, anti-HBc, and liver enzymes.
**With management of active infection by health care provider.
***Use with caution. Only initiate if patient is receiving HAART, has a normalized CD4+ T cell count, no detectable viral load, and no history of opportunistic infection. Consult the patient's infectious disease provider prior to initiation.

Abbreviations: Tumor necrosis factor (TNF), Subcutaneous (SQ), Psoriasis (PsO), Psoriatic arthritis (PsA), Ankylosing spondylitis (AS), Rheumatoid arthritis (RA), Juvenile idiopathic arthritis (JIA), Inflammatory bowel disease (IBD), CVD (cardiovascular disease), Hepatitis B (HBV), Hepatitis C (HCV), Human immunodeficiency virus (HIV), Multiple sclerosis (MS), Congestive heart failure (CHF), CI (contraindicated), Hidradenitis suppurativa (HS), Antibodies (Abs), Intravenous (IV), Methotrexate (MTX), Interleukin (IL), Black Box warning (BBW).

## DISCUSSION

The authors have disclosed no conflicts.

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