



Fancy Creams for Scaly Skin: Topical calcineurin inhibitors for atopic dermatitis

CLINICAL QUESTION

What are the risks and benefits of topical calcineurin inhibitors for atopic dermatitis?

BOTTOM LINE

For improvement of atopic dermatitis, tacrolimus 0.1% is at least equivalent to moderate-potency topical corticosteroids. Pimecrolimus 1% is better than placebo, but likely inferior to tacrolimus 0.1% and moderate potency corticosteroids. Burning skin sensation is common early (30-50% of users) but tapers off for most (<10% at 6 months).

EVIDENCE

- Results statistically different unless stated.
- 4 systematic reviews with meta-analyses in past 10 years.¹⁻⁴
- Versus vehicle/low potency topical corticosteroids:
 - Tacrolimus 0.1% (2 RCTs, 460 patients) improved atopic dermatitis for 48-67% versus 16-38% with vehicle/hydrocortisone acetate 1%, number needed to treat (NNT)=3-4 at 3 weeks.⁵⁻⁶
 - Other RCT showed similar.⁷

- Pimecrolimus 1% (meta-analysis: 8 RCTs, 2298 patients) improved atopic dermatitis for 44% versus 22% with vehicle, NNT=5 at 6 weeks.¹
- Versus moderate/high potency topical corticosteroids:
 - Tacrolimus 0.1% in:
 - 2 RCTs (1540 patients) improved atopic dermatitis for 73-93% versus 52-88% for corticosteroids at 3-12 weeks.^{8,9} Other RCT showed similar.¹⁰
 - 4 RCTs (513 patients) found no difference at 2 weeks-11 months.¹¹⁻¹⁴
 - Pimecrolimus 1% in:
 - 1 RCT (2418 patients) found no difference at 3 weeks.¹⁵
 - 2 RCTs (745 patients) improved atopic dermatitis for 37-53% versus 68-88% with corticosteroids at 3 weeks. Corticosteroids superior, NNT=3-4.^{16,17}
- Tacrolimus 0.1% versus Pimecrolimus 1%:
 - Meta-analysis (3 RCTs, 543 patients),² good response: 35% tacrolimus versus 19% pimecrolimus at 2-6 weeks, NNT=7.
 - Network meta-analysis: No difference.¹⁸
- Adverse effects calcineurin inhibitors versus topical corticosteroids (3-52 weeks):²
 - Skin burning: 30% versus 9%, number needed to harm=4.
 - Skin atrophy: 0% versus 0.8%, not significant.
- Limitations: Most RCTs funded by manufacturers.²

CONTEXT

- Tacrolimus 0.1% superior to tacrolimus 0.03% with similar side effects.²
- Pimecrolimus 1% (cream) approved for patients >3 months old,¹⁹ tacrolimus 0.1% (ointment) for patients >15 years old.²⁰
- Application site reactions (skin burning, pruritus): Usually transient. Example, tacrolimus 0.1% skin burning: 51% (week 1), 17% (week 2), 7% (month 6).⁸
- Inconsistent association between calcineurin inhibitors and lymphoma.²¹⁻²³
 - Health Canada warning removed 2021.²⁴
- Cost (30 grams):²⁵ Tacrolimus 0.1% ~\$103, betamethasone valerate 0.1% ~\$13.

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