

Calcipotriene Therapeutic Cheat Sheet

COMPILED BY: NIDHI SHAH, MD | REVIEWED BY: ADAM FRIEDMAN, MD

TRADE NAME¹⁻³

- > Dovonex (calcipotriene cream, ointment, solution, 0.005%)
- > Calcitrene (calcipotriene ointment, 0.005%)
- > Sorilux (calcipotriene foam, 0.005%)

MECHANISM OF ACTION¹⁻⁵

- > Calcipotriene (calcipotriol) is a synthetic Vitamin D3 analogue which like its natural form, calcitriol (1,25-dihydroxycholecalciferol), binds to the Vitamin D receptor (VDR) on epidermal keratinocytes and lymphocytes.
 - > Calcipotriene has a shorter half-life than calcitriol and has less impact on calcium metabolism, making it the preferred agent for topical use.
- > Vitamin D analogues have a variety of functions including regulating cell proliferation, promoting differentiation, increasing cellular calcium levels, and inhibiting production of inflammatory cytokines by T cells.
- > In psoriasis particularly, calcipotriene has been shown to inhibit cellular proliferation, stimulate cellular differentiation, suppress epidermal T-cell accumulation, and modulate dendritic cells to reduce stimulation of T cells.
 - > Vitamin D analogues can lead to class switching from Th1 and Th17 to the Th2 pathway, and these effects are enhanced by combination with topical steroids.

FDA-APPROVED FOR¹⁻³

- > Plaque psoriasis

OFF-LABEL DERMATOLOGIC USES^{1-4,7,8}

- > Actinic Keratosis
- > Alopecia areata
- > Hand eczema
- > Lichen planus
- > Lichen sclerosus
- > Seborrheic dermatitis
- > Seborrheic keratoses
- > Vitiligo
- > Dermatoporosis

DOSING¹⁻⁴

- > Calcipotriene cream, ointment, and foam are for topical use only and patients should apply a thin layer to the affected areas once to twice daily.
 - > As monotherapy treatment, calcipotriene significantly reduces the psoriasis area and severity index (PASI) from baseline compared to placebo. In clinical trials, therapeutic improvements were noted after 2 weeks of therapy with calcipotriene cream, and about 50% patients had a reduction in signs and symptoms of psoriasis, but only 4% had complete clearance of psoriasis.
- > In one short-term study, calcipotriene ointment and cream were directly compared with a slightly greater reduction in PASI score with the ointment than the cream. However, the cream formulation is generally preferred over the ointment given higher tolerability of the cream.⁴
- > For short-term treatment, several studies have demonstrated that twice daily application of calcipotriene cream is more effective in reducing PASI score than once daily application. It is suggested that once-daily application of calcipotriene cream has less antiproliferative action on the epidermis. However, treatment compliance has been proven to be higher with once-daily regimens than twice-daily regimen for psoriasis therapy.⁴

WARNINGS AND PRECAUTIONS¹⁻⁶

- > Should be avoided in patients with hypercalcemia or evidence of Vitamin D toxicity.
 - > The maximum dose should not exceed 15g/day and 100g/week to avoid the risk of hypercalcemia.⁵
- > The prescribing information for calcipotriene state that calcipotriene cream and ointment should not be used on the face, however, several studies have demonstrated successful use of the formulation on the face and in the intertriginous areas.⁵
- > In some animal studies, there was a reduction in time required for UV radiation (UVR) to induce formation of skin tumors, suggesting that calcipotriene may enhance the effect of UVR to induce skin tumors. Patients should avoid excess exposure to either natural or artificial sunlight when using calcipotriene and may want to limit or avoid the use of concurrent phototherapy.

SIDE EFFECTS¹⁻³

- > Calcipotriene is generally well tolerated, and most common side effects include lesional or perilesional irritation including rash, pruritus, and dermatitis. Rarely, worsening of the psoriasis lesions was also observed in clinical studies.

DRUG INTERACTIONS¹⁻³

- > There are no known drug interactions with topical calcipotriene.

CONTRAINDICATIONS¹⁻³

- > Contraindicated in patients with a history of hypersensitivity to calcipotriene or any ingredients in the formulation.

PREGNANCY AND BREASTFEEDING^{1-3,6}

- > Topical calcipotriene is pregnancy risk category C.
 - > There are no adequate and well-controlled studies with use of topical calcipotriene in pregnant women.
 - > Systemic absorption may occur with topical vitamin D analogues and in animal studies there is a higher incidence of skeletal abnormalities.
 - > Advise caution with the use of calcipotriene during pregnancy and use only if the potential benefit justifies the potential risk of to the fetus.
- > It is not known whether calcipotriene is excreted in human milk.

MONITORING¹⁻³

- > None

REFERENCES

1. Glenmark Pharmaceuticals, Inc. Drug label information. Calcipotriene ointment USP, 0.005%. Updated April, 2020. <https://dailymed.nlm.nih.gov/dailymed/lookup.cfm?setid=1bc020e0-b5ae-4cda-aa5b-87fa0452a6bc>
2. Dovonex. Drug label information. Calcipotriene cream, 0.005%. Updated March, 2015. https://www.accessdata.fda.gov/drugsatfda_docs/label/2015/020273s013,020554s012lbl.pdf
3. Stiefel Laboratories, Inc. Drug label information. Sorilux (calcipotriene), foam 0.005%. Updated September, 2012. https://www.accessdata.fda.gov/drugsatfda_docs/label/2012/022563s002lbl.pdf
4. Segaert S, Duvold LB. Calcipotriol cream: a review of its use in the management of psoriasis. *J Dermatolog Treat.* 2006;17(6):327-337. doi:10.1080/09546630600999219
5. Patel RT, Gay JJ, Fagan KK, Eikenberg JD. Non-psoriatic uses of calcipotriol: a concise updated review. *Dermatol Online J.* 2023;29(3):10.5070/D329361422. Published 2023 Jun 15. doi:10.5070/D329361422
6. Ferreira C, Azevedo A, Nogueira M, Torres T. Management of psoriasis in pregnancy - a review of the evidence to date. *Drugs Context.* 2020;9:2019-11-6. Published 2020 Mar 9. doi:10.7573/dic.2019-11-6