

+ Evidence in focus

Poster summary: Jimenez JC, et al. Wounds (2017)*

Collagenase SANTYL^o Ointment 250 units/g significantly reduced mean wound area and was more likely to achieve wound closure than hydrogel in patients with diabetic foot ulcers (DFUs)

+ Plus points

Significant reduction from baseline in DFU wound area with SANTYL Ointment at Weeks 6 and 12 ($p < 0.0001$ for both)

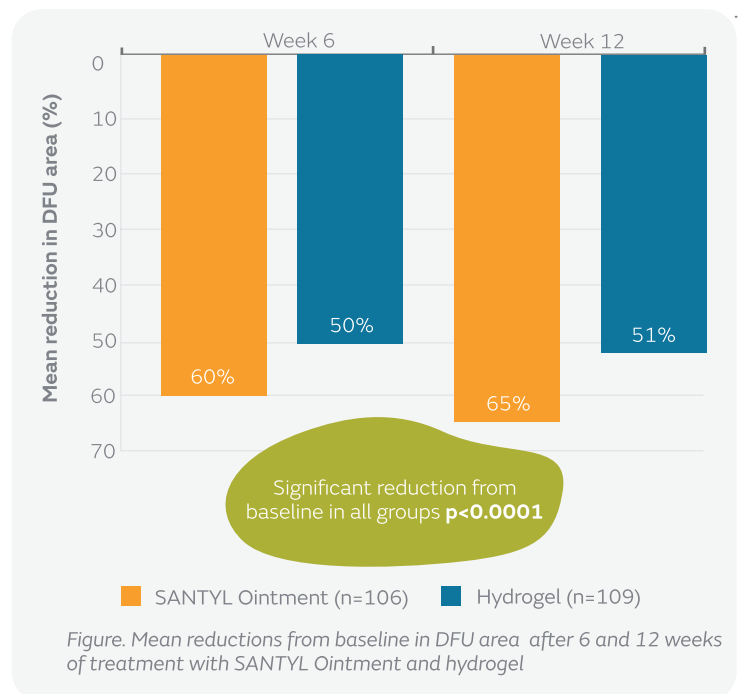
Patients who switched to SANTYL Ointment were **four times** more likely to achieve DFU closure than those who switched to hydrogel

Overview

- Randomized, parallel-group, open label, 12-week study conducted at 26 sites in the US and Canada
- Patients with type 1 or 2 diabetes and a plantar neuropathic DFU (duration ≥ 6 weeks) received once daily application of SANTYL Ointment (thickness ~2mm; n=106) or standard care of daily hydrogel (n=109)
 - Sharp debridement was allowed when medically warranted
- After 4 weeks, patients with no decrease in ulcer size switched to the other treatment group
- DFU closure was defined as 0% wound area

Results

- Reductions from baseline in mean wound area were:
 - Statistically significant with both SANTYL Ointment and hydrogel at Weeks 6 and 12 ($p < 0.0001$; Figure)
 - Significant after 1 week with SANTYL Ointment ($p < 0.0001$) and after 2 weeks with hydrogel ($p = 0.0275$)
 - Greater with SANTYL Ointment than hydrogel at all timepoints of the 12-week treatment period
- Patients who switched to SANTYL Ointment were four times more likely to achieve DFU closure than patients who switched to hydrogel (33 vs 8%)



Conclusions

SANTYL Ointment achieved greater reductions in mean DFU area than hydrogel at all timepoints, with significant differences versus baseline from Week 1. DFUs that did not improve after initial treatment were more likely to achieve closure by switching to SANTYL Ointment than to hydrogel.

Citation

**Jimenez JC, Agnew PS, Mayer P, et al. Enzymatic debridement of chronic nonischemic diabetic foot ulcers: Results of a randomized, controlled trial. *Wounds*. 2017;29(5):133–139. Available at: [Wounds](#)

Available from: [Wounds](#) 

Important Safety Information

Indications: Collagenase SANTYL Ointment (“SANTYL”) is indicated for debriding chronic dermal ulcers and severely burned areas.

Contraindications: SANTYL is contraindicated in patients who have shown local or systemic hypersensitivity to collagenase. **Warnings**

and Precautions: The optimal pH range of collagenase is 6 to 8. Higher or lower pH conditions will decrease the enzyme’s activity and appropriate precautions should be taken. The enzymatic activity is also adversely affected by certain detergents, and heavy metal ions such as mercury and silver which are used in some antiseptics. As such, the wound should be properly cleansed prior to application of SANTYL. Debilitated patients should be closely monitored for systemic bacterial infections because of the theoretical possibility that debriding enzymes may increase the risk of bacteremia. A slight transient erythema has been noted occasionally in the surrounding tissue, particularly when SANTYL was not confined to the wound. SANTYL is not indicated for wound closure. Discontinue use of SANTYL after granulation tissue is well-established. **Adverse Reactions:** No allergic sensitivity or toxic reactions have been noted in clinical use when used as directed. The risk information provided herein is not comprehensive. You are encouraged to report negative side effects of prescription drugs to the FDA. Visit MedWatch or call 1-800-FDA-1088.

Collagenase SANTYL^o

Ointment 250 units/gram

DESCRIPTION

Collagenase SANTYL^o Ointment is a sterile enzymatic debriding ointment which contains 250 collagenase units per gram of white petrolatum USP. The enzyme collagenase is derived from the fermentation by *Clostridium histolyticum*. It possesses the unique ability to digest collagen in necrotic tissue.

CLINICAL PHARMACOLOGY

Since collagen accounts for 75% of the dry weight of skin tissue, the ability of collagenase to digest collagen in the physiological pH and temperature range makes it particularly effective in the removal of detritus.¹

Collagenase thus contributes towards the formation of granulation tissue and subsequent epithelization of dermal ulcers and severely burned areas.^{2,3,4,5,6}

Collagen in healthy tissue or in newly formed granulation tissue is not attacked.^{2,3,4,5,6,7,8}

There is no information available on collagenase absorption through skin or its concentration in body fluids associated with therapeutic and/or toxic effects, degree of binding to plasma proteins, degree of uptake by a particular organ or in the fetus, and passage across the blood brain barrier.

INDICATIONS AND USAGE

Collagenase SANTYL^o Ointment is indicated for debriding chronic dermal ulcers^{2,3,4,5,6,8,9,10,11,12,13,14,15,16,17,18} and severely burned areas.^{3,4,5,7,16,19,20,21}

CONTRAINDICATIONS

Collagenase SANTYL^o Ointment is contraindicated in patients who have shown local or systemic hypersensitivity to collagenase.

PRECAUTIONS

The optimal pH range of collagenase is 6 to 8. Higher or lower pH conditions will decrease the enzyme's activity and appropriate precautions should be taken. The enzymatic activity is also adversely affected by certain detergents, and heavy metal ions such as mercury and silver which are used in some antiseptics.

When it is suspected such materials have been used, the site should be carefully cleansed by repeated washings with normal saline before Collagenase SANTYL^o

Ointment is applied. Soaks containing metal ions or acidic solutions should be avoided because of the metal ion and low pH. Cleansing materials such as Dakin's solution and normal saline are compatible with Collagenase SANTYL^o Ointment.

Debliterated patients should be closely monitored for systemic bacterial infections because of the theoretical possibility that debriding enzymes may increase the risk of bacteremia.

A slight transient erythema has been noted occasionally in the surrounding tissue, particularly when Collagenase SANTYL^o Ointment was not confined to the wound. Therefore, the ointment should be applied carefully within the area of the wound. Safety and effectiveness in pediatric patients have not been established.

ADVERSE REACTIONS

No allergic sensitivity or toxic reactions have been noted in clinical use when used as directed. However, one case of systemic manifestations of hypersensitivity to collagenase in a patient treated for more than one year with a combination of collagenase and cortisone has been reported.

OVERDOSAGE

No systemic or local reaction attributed to overdose has been observed in clinical investigations and clinical use. If deemed necessary the enzyme may be inactivated by washing the area with povidone iodine.

DOSAGE AND ADMINISTRATION

Collagenase SANTYL^o Ointment should be applied once daily (or more frequently if the dressing becomes soiled, as from incontinence). When clinically indicated, crosshatching thick eschar with a #10 blade allows Collagenase SANTYL^o Ointment more surface contact with necrotic debris. It is also desirable to remove, with forceps and scissors, as much loosened detritus as can be done readily. Use Collagenase SANTYL^o Ointment in the following manner:

1. Prior to application the wound should be cleansed of debris and digested material by gently rubbing with a gauze pad saturated with normal saline solution, or with the desired cleansing agent compatible with Collagenase SANTYL^o Ointment (See **PRECAUTIONS**), followed by a normal saline solution rinse.

2. Whenever infection is present, it is desirable to use an appropriate topical antibiotic powder. The antibiotic should be applied to the wound prior to the application of Collagenase SANTYL^o Ointment. Should the infection not respond, therapy with Collagenase SANTYL^o Ointment should be discontinued until remission of the infection.

3. Collagenase SANTYL^o Ointment may be applied directly to the wound or to a sterile gauze pad which is then applied to the wound and properly secured.

4. Use of Collagenase SANTYL^o Ointment should be terminated when debridement of necrotic tissue is complete and granulation tissue is well established.

HOW SUPPLIED

Collagenase SANTYL^o Ointment contains 250 units of collagenase enzyme per gram of white petrolatum USP.

Do not store above 25°C (77° F) Sterility guaranteed until tube is opened.

Collagenase SANTYL^o Ointment is available in the following sizes:

- 30 g tube NDC 50484-010-30
- 90 g tube NDC 50484-010-90

REFERENCES

1. Mandl, I., *Adv Enzymol.* 23:163, 1961.
2. Boxer, A.M., Gottesman, N., Bernstein, H., & Mandl, I., *Geriatrics.* 24:75, 1969.
3. Mazurek, I., *Med. Welt.* 22:150, 1971.
4. Zimmermann, W.E., in "Collagenase," Mandl, I., ed., Gordon & Breach, Science Publishers, New York, 1971, p. 131, p. 185.
5. Vetra, H., & Whittaker, D., *Geriatrics.* 30:53, 1975.
6. Rao, D.B., Sane, P.G., & Georgiev, E.L., *J. Am. Geriatrics Soc.* 23:22, 1975.
7. Vrabec, R., Moserova, J., Konickova, Z., Behoukova, E., & Blaha, J., *J. Hyg. Epidemiol. Microbiol. Immunol.* 18:496, 1974.
8. Lippmann, H.I., *Arch. Phys. Med. Rehabil.* 54:588, 1973.
9. German, F. M., in "Collagenase," Mandl, I., ed., Gordon & Breach, Science Publishers, New York, 1971, p. 165.
10. Haimovici, H. & Strauch, B., in "Collagenase," Mandl, I., ed., Gordon & Breach, Science Publishers, New York, 1971, p. 177.
11. Lee, L.K., & Ambrus, J.L., *Geriatrics.* 30:91, 1975.
12. Locke, R.K., & Heifitz, N.M., *J. Am. Pod. Assoc.* 65:242, 1975.
13. Varma, A.O., Bugatch, E., & German, F.M., *Surg. Gynecol. Obstet.* 136:281, 1973.
14. Barrett, D., Jr., & Klubanski, A., *Am. J. Nurs.* 73:849, 1973.
15. Bardfeld, L.A., *J. Pod. Ed.* 1:41, 1970.
16. Blum, G., Schweiz, *Rundschau Med Praxis.* 62:820, 1973. *Abstr. in Dermatology Digest*, Feb. 1974, p. 36.
17. Zaruba, F., Letti, A., Brozkova, L., Skrdlantova, H., & Krs, V., *J. Hyg. Epidemiol. Microbiol. Immunol.* 18:499, 1974.
18. Altman, M.I., Goldstein, L., & Horwitz, S., *J. Am. Pod. Assoc.* 68:11, 1978.
19. Rehn, V.J., *Med. Klin.* 58:799, 1963.
20. Krauss, H., Koslowski, L., & Zimmermann, W. E., *Langenbecks Arch. Klin. Chir.* 303:23, 1963.
21. Gruenagel, H.H., *Med. Klin.* 58:442, 1963.

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