



## SHORT NOTE

# Tranilast for Preventing Scar Formation: A Renewed Therapeutic Option

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## Abstract

The current strategies adopted for treating and preventing scar development still present many difficulties such as in cases of severe burns. Tranilast, a familiar agent for the treatment of allergies, regulates several biological processes including wound healing. Regardless of the site of scarring, tranilast is expected to minimize scar formation systemically for burns, post-surgical scars, and skin diseases such as severe acne. Tranilast is highly safe and can treat scar formation without placing a physical burden on the patient.

## Keywords

Tranilast, Scars, Keloids, Hypertrophic scars, Burns, Post-surgical scars, Post-acne scarring

## Introduction

Current strategies adopted for treating and preventing scar development has many limitations as evidenced by the lack of definitive treatment for scarring reported by Arno, et al. [1]. Currently, various methods [1] for reducing scarring such as intralesional corticoid injections, pressure garments, and botulinum toxin are available. However, to date, the optimal treatment method has not been established. Different methods have been adopted according to the severity of the cases. In Japan, tranilast (N-[3',4'- dimethoxycinnamoyl]-anthranilic acid) [2] is already familiar for the treatment of hypertrophic scars and keloids. It was initially approved as an anti-allergic agent as it inhibits degranulation of mast cells; however, it can also regulate mast cell-derived mediators, such as transforming growth factor (TGF)- $\beta$ 1, in the inflammation and remodelling stages of wound healing [2]. Unfortunately, tranilast is

not recognized worldwide even after nearly 30 years from its release, as it was marketed only in Japan and South Korea. In dermatology, keloids, hypertrophic scars, and atrophic scars are major concerns that impair the quality of life for patients, forcing clinicians to re-evaluate the treatment of severe burns, post-surgical scars, and several inflammatory skin diseases such as severe acne. This short note presents the usefulness of tranilast as a potential therapeutic option for preventing scar development, considering various skin diseases and situations.

## Reducing Post-burn Scars and Keloids

In severely burned patients, post-burn scarring management and prevention [3] are very important, particularly for the patient's quality of life, as evidenced by the most common areas of research in burn patients focusing on psychopathological concerns [4] such as depression and post-traumatic stress disorder (PTSD). Moreover, contractures [1] are more likely to occur in very severe burns. In Japan, tranilast is mainly used to treat keloids and hypertrophic scars, particularly in burns. In severe burns, there is concern about extensive scar formation at the wound site. The usefulness of combination therapy, such as external triamcinolone acetonide (TAC) and systemic fluorouracil (5-FU) [5], an anticancer agent, has been reported for treating scars in clinical trials; however, there is also concern over the safety of 5-FU. As an alternative treatment given in a timely manner, tranilast should be administered as soon as burn treatments, such as skin grafting, is completed.

## Prevention of Post-surgical and Traumatic Scars and Keloids

Surgeons, obstetricians/gynecologists, and dermatologists will be required to provide appropriate advice on the care of post-surgical wound scars [3] and available treatment options such as tranilast. Since scars after surgical operation are not necessarily wide in scope, unlike burns, a surgical patient is usually predisposed to expect a scar [6]. Most recently, external treatment of scars using tranilast 8% gel cream [7] has been considered, although systemic administration of tranilast may be more effective. Traumatic scars [8] are also particularly problematic in exposed areas such as the face and hands, as the face is directly related to the patient's quality of life. As scarring of the wound is also largely related to the predisposition of the patient, it is desirable to grasp the genetic factors of the patient [6] and administer tranilast immediately after the wound is healed. Due to the nature of trauma, it is recommended that scars on joints are treated using tranilast in combination with pressure garments [1].

## Synergistic Effects of Tranilast Combined with Antibiotics

Recently, the present author reported the synergistic effects of tranilast and antibiotics, which prevented scarring in severe acne [9]. The main effects of tranilast occur via inhibition of degranulation of mast cells and regulation of mast cell-derived mediators, such as TGF- $\beta$ 1, in inflammatory skin lesions [2]. In inflammatory acne lesions, antibiotics such as minocycline synergistically acts on purulent inflammation when combined with tranilast [9], which suppresses scarring of hair follicles due to inflammation. The synergistic effects of tranilast combined with other drugs [10] is expected to help in developing strategies for treating several systemic diseases involving mast cells.

## Conclusions

Tranilast should be considered as a systemic treatment that can treat any part of a wound for scarring without being burdensome to the patients. Regardless of the cause, scars can be accompanied by mental disorders and emotional distress over its aesthetic aspects. Although nothing is perfect, the use of tranilast to reduce scarring is important to maintain the patient's quality of life. It is an extremely safe drug though side effects have been reported albeit very rarely. Moreover, the patent period for this drug has already expired, providing the

freedom to distribute and market tranilast globally. The usefulness of this therapeutic agent, tranilast, for scarring should be shared not only in Japan and South Korea, but also in the world.

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## Author Statements

The author has contributed significantly to this manuscript.

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