

Vanillin soothing effect in treating certain oral disease entities

Tahani A AL-SANDOOK*
Bassman A KHALIL**
Nahlah O TAWFIK***

ABSTRACT

Topical application of 2% vanillin in glycerin was found to be effective in relieving pain associated with aphthous ulceration, hypersensitive cementum and ulcerative margin associated with pericoronitis. This analgesic effect of vanillin was explained to its local anesthetic effect .

Key Words: Vanillin, aphthous ulceration, hypersensitivity, pericoronitis.

الخلاصة

وُجِدَ أنَّ للتطبيق الموضعي لـ (2%) فانيلين في الغليسرين تأثير فعّال في إزالة الألم المرتبط مع التقرحات الفموية، فرط حساسية الملاط، والحافات المتقرحة المرتبطة بالتهاب الأنسجة حول ضرس العقل. ويُعزى هذا التأثير المسكن للفانيلين إلى تأثير مخدّره المحلي.

INTRODUCTION

Pain relieving medication was considered as principal aim in controlling and managing certain oral disease entities, enabling the patient to eat, sleep and to perform his usual daily activities. Of these oral diseases that are selected in this study, were pericoronitis ulcerative margin, aphthous ulceration, and hypersensitive cementum. One step of symptomatic control of aphthous ulceration was indicated by topical adrenal steroil^(1,2,3), while other indicated the use of tetracycline regime who found it helpful in about 70% of the studied cases⁽⁴⁾.

Pain associated with hypersensitive cementum was controlled by the topical application of 2% Sodium fluoride or 10% of stannous fluoride⁽⁵⁾, or by adrenal sterol such as 0.5 % Prednisolone solution⁽⁶⁾, or by desensitizing tooth paste⁽⁷⁾.

*Tahani Abdul - Aziz AL-SANDOOK; BDS, PhD: Assistant Prof. Department of Oral and Maxillofacial Surgery, College of Dentistry, University of Mosul, Mosul, IRAQ.

**Basman Abdul - Mutalib KHALIL; BDS, MSc: Lecturer. Department of Oral and Maxillofacial Surgery, College of Dentistry, University of Mosul, Mosul, IRAQ.

***Nahlah Othman TAWFIK; MBChB, MSc: Assistant Lecturer. Department of Basic Sciences, College of Dentistry, University of Mosul, Mosul, IRAQ.

Controlling pain associated with pericoronitis was by the use of systemic analgesic, by gentle debridement of the Cul -de Sac area by Curet or Saline irrigation may be required accompanied by warm Saline rinse⁽⁵⁾.

In this study 2% of vanillin in glycerin was used topically for controlling pain associated with aphthous ulceration, pericoronitis and hypersensitive cementum.

MATERIALS AND METHOD

A double blind test was carried out in this study. Neither the patient nor the dentist knew about the identity of medication.

Two percent of vanillin in glycerin was prepared and labeled as (B), while 100% glycerin alone was labeled as (A), which was considered as control. All patients participate in this study were medically fit. All oral lesions were selected by periodontist, patient average age were 19-27 years.

Oral lesions selected were aphthous ulceration, ulcerative lesion associated with pericoronitis and hypersensitive cementum.

Patients were divided into two main groups, in each group patient selected having one of the three previously mentioned lesions. The first main group was considered as control group (group A), to whom medication labeled (A) was applied, while the second main group was considered as group (B) to whom medication labeled (B) was applied by topical mean. Special recording sheet was used in which the time of application, onset of action, duration of action, number of application, onset of pain after application, and the presence of unpleasant feeling of pain was recorded. This sheet was handled to highly cooperative patients. Patients were checked regularly every day for the following five days of drug application.

All patients were handled medication and were instructed to apply medication on the affected area regularly three times daily.

RESULTS

Table (1) shows the number and age of control group. Table (2) shows the number and age of the vanillin group.

Table (1): The number and age of the control group.

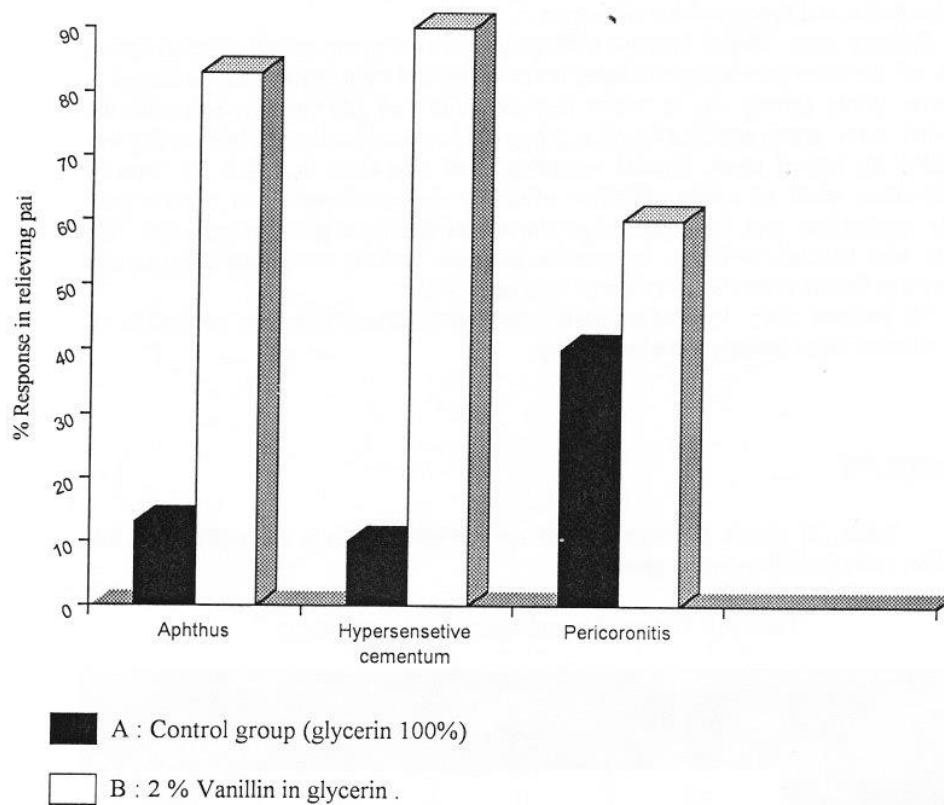
| Group (A) Patients | | | | |
|-------------------------|--------------------|---------------|-------------|---------------------|
| Oral Lesions | Number of Patients | Total Females | Total Males | Average Age (Years) |
| Recurrent Aphthous | 23 | 10 | 13 | 19-25 |
| Hypersensitive Cementum | 15 | 7 | 8 | 20-25 |
| Pericoronitis | 20 | 15 | 5 | 21-27 |

Table (2): The number and age of group received 2% vanillin medication.

| Group (B) Patients | | | | |
|-------------------------|--------------------|---------------|-------------|---------------------|
| Oral Lesions | Number of Patients | Total Females | Total Males | Average Age (Years) |
| Recurrent Aphthus | 19 | 10 | 9 | 20-25 |
| Hypersensitive Cementum | 12 | 5 | 7 | 21-26 |
| Pericoronitis | 19 | 14 | 5 | 19-23 |

A diagram presented in figure (1) demonstrates the percentage response of vanillin medication in relieving pain at $p < 0.01$.

Figure (1): the percentage response to vanillin medication in relieving pain



1. Aphthous ulceration:

Good response was established with application of 2% vanillin to the affected area pain was subsided after 2-4 min. immediate redness to the area was noticed and patient feels burning sensation immediately following by pain relief, healing of the ulcer was established after two days of regular use of medication 2% of patients discontinued medication due to the immediate burning sensation.

No response in group (A), only sensation of cooling that last for few min.

2. Hypersensitive cementum in group (B):

90% (+) response in group B localized irritation was noticed immediately followed by pain relief, while no response in group A.

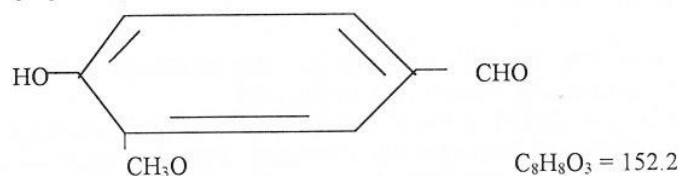
3. Ulcerative margin of pericoronitis:

Healing of ulcerative margin was established in all patients that subside after two days of medication in group (B). 40% of patients in group (B) complain from pain that require the use of systemic antibiotic and analgesic.

No response in group (A) patients.

DISCUSSION

Vanillin or Vanillinum is 4- hydroxy -3- methoxy benzaldehyde, and may be obtained from *Vanilla Planifolia* Andrews, or other species of vanilla (Fam - Orchidaceae), or prepared synthetically.



Vanillin occurs as fine, white or slight yellow crystals, usually needle like, having an odor and taste suggestive of vanillin⁽⁸⁾.

Vanillin chemical structure resembles phenol (C₆H₆O). Phenol possesses slight anesthetic action, but phenol was considered as toxic to all types of cells in low concentration as it denatures protein without coagulating them⁽⁸⁾. The similarities in chemical structure evoke the idea of using vanillin as substitute to phenol to achieve local anesthetic effect without harming the oral mucous membrane.

In this study topical application of 2% vanillin in glycerin was found to be highly effective in relieving pain associated with aphthous 82.7 %, facilitate healing of ulcer that was noticed to be completely healing after 3 days.

The analgesic effect of vanillin last up to 3 hours that made medication must be applied three to four times daily.

In this study, 2 % of vanillin was found to relief pain associated with hypersensitive cementum at about 90%. Only 10 % of patient discontinued medication as the sensation of burning was noticed immediately followed application. Soothing effect in some patient last up to 24 hours.

Two percent of vanillin relieves the ulcerative margin associated with pericoronitis on the second day, but the pain sensation was noticed in 50% of treated individuals

which was explained by the trismus and by the pressure imposed by the impacted wisdom tooth.

The above results in this study indicate that vanillin has possessed an analgesic effect when applied topically this analgesic, soothing effect can be explained by the fact that vanillin had a local anaesthetic effect that was obtained by other worker⁽⁹⁾.

The analgesic effect of 2 % vanillin was established after 2-3 min. which is very convenient in painful ulceration, its effect last for several hours afterward and up to 24 hours in case of relieving pain associated with hypersensitive cementum which makes the medication applied once or twice daily. Vanillin in addition proved to be natural food substance; it is not hormone like corticosteroid producing no effect on adrenal gland on long- term therapy⁽⁶⁾.

According to the data obtained in this study we recommend the use of vanillin as principal constituent in toothpaste for the treatment of hypersensitive cementum as all dentifrices reduced tooth hypersensitivity after four weeks of use⁽⁷⁾. The application of 2% vanillin with Orabase to be used as topical application for relieving pain associated with aphthous ulceration and ulcerative gingivitis associated with pericoronitis as all the signs of redness and inflammation of ulceration was subsided within two days of vanillin administration.

REFERENCES

1. Browne RM, Fox EC, Anderson RJ. Topical triamcinolone acetonide in recurrent aphthous stomatitis. *Lancet*. 1968; 1: 565 -567.
2. Burket LW. Oral Medicine. 5th Edn. Philadelphia, J.B Lippincott Co. 1965. Pp: 117.
3. Tere Zhalmly G, Bottomley WB, Pelleu GB. The use of water solution bioflavonoid-ascorbic acid complex in the treatment of recurrent herpes labialis. *Oral Surg*. 1978; 45: 56 -62.
4. Graykowski EA, Barile MF, Stanley HR. Periapical aphthae : Clinical and histological aspects of lesions in a patient and of lesions produced in rabbit skin. *J Am Dent Assoc*. 1964; 69: 118-126.
5. Terhune RC. Clinical Pharmacology in Dental Practice. 3rd Edn. Mosby Co. 1983. Pp: 295
6. Bowers GM, Elliott JR. Topical use of prednisolone in periodontics. *J Periodontol*. 1964; 35 : 496.
7. Hazen SP, Volpe AR, King WJ. Comparative desensitizing effect of dentifrices containing sodium monofluorophosphate, stannous fluoride and formalin. *Periodontics* . 1968; 6 :230-232.
8. Wilson, Grisvolds. Textbook of Organic Medical and Pharmaceutical Chemistry. 8th Edn. Edited by Robert F Doerge . 1982. Pp: 833, 135.
9. Tawfik NOM, Taka AA, Al-Khayat IK. Antinociception induced by topical administration of eugenol, vanillin and their derivatives in mice. *Iraqi J Veterinary Sci*. 1998; 11(2):171.