

Clinic Efficacy of the Piper Ottonoides Based Ointment for the Topical Anesthetic on the Oral Mucosa

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Abstract: The present study aimed to determine the effectiveness of Piper ottonoides ointment for topical anesthesia on buccal mucosa and its security. The volunteers buccal mucosa were dried and topical agents were applied. Next, a short needle was inserted in the mucobuccal fold above the maxillary canine eminence and then immediately removed, each volunteer served as his/her own control. Pain measure was done by a visual analogue scale and by heart rate. A one way analysis of variance followed by Kruskal-Wallis Test showed that there was not a significant difference in the effectiveness of Piper ottonoides ointment (20,5%) compared to the control benzocaine ($P < 0.05$). Piper ottonoides ointment was effective and secure in reducing pain from needle inserting in a methodology used in the present study.

Keywords: Topical anesthetic, *Acmella oleracea*, Benzocaine, Pain.

I. Introduction

One of the most important aspects of the odontology practice is the pain control or pain elimination^[1-2]. For the pain control, it is necessary the use of medicines, among them the analgesics and the anesthetics. The anesthetic salts are formed by alkaloid weak basis combined to strong acids. The anesthetic solutions cause a suppression of the afferent neural transmission^[3].

The key to the anesthetic solution arrives until the local action is a needed maneuver minimally invasive to the adjacent tissues which can cause pain, provoked by the needle introduction. This sensation can vary pursuant the pain experience lived by the patient so far, and to minimize the puncture pain it is possible to make use of some artifices, such as the topical anesthetic^[4].

Through the topical analgesic, the free nerve endings of accessible structures (intact mucous membrane, scrubbed skin or ocular surface), get disabled of the stimulation by the application of an appropriate solution direct on the surface area^[5].

Some substances are frequently used as analgesics. The incessant search for alternative and natural ways of treatments make this study also interesting to be used as topical anesthetics^[6].

The family Piperaceae comprehends 12 genders and around 1400 species. Piper is the gender with the biggest number of species, around 700, which more than 170 happen in Brazil^[7]. The family Piperaceae is represented by herbaceous plants, climbing plants, shrubs and, rarely, trees. Piper species are phenylpropanoids great producers, which own sharp biological activity^[6]. The Piper ottonoides, popularly known as João Brandin, is used as astringent, digestive, anti-diarrheic, local homeostatic, antileukorrheic, etc. The leaves when chewed cause the tingling sensation on the lips and tongue promoting local anesthetics, being as so used for toothache^[7].

Considering that there are no studies about the Piper ottonoides anesthetic action, the present work evaluated the anesthetic effect on the oral mucosa of a P. ottonoides extract based ointment.

II. Materials And Methods

The sample consisted of 24 volunteers, who are between 18 and 24 years, the patients with sensibility to anesthetics were excluded, who were using antidepressants and with endocrinal, metabolic, and hormonal diseases as so pregnant women^[8-9]. The essential oil of the Piper leaves was gotten from the hydrodistillation process using the fresh flowered worthy^[10] coming from the existing plantations of the Horto Medicinal de Universidade Paranaense. The essential oil was incorporated into ointment with polyethylene glycol 4000 (205) and polyethylene glycol 400 (75%) basis^[11], being incorporated on the concentration of 20,5% which was the maximum concentration which allowed the base paste incorporation, with appropriate viscosity. As positive control, benzocaine was used on the concentration of 20% (Benzotop® - DFL).

The order to the ointment administration inside each combination such as the side of the first needle insertion was randomly distributed. The tested area was the sulcus vestibular mucous of the canine eminence^[8]. The regional mucosa was dried in both sides of the mouth and the topical agents were applied with a sterile

cotton swab. After 3 minutes, an anesthesia needle size 27 was inserted in the mucosa. The volunteer filled a visual analog scale (VAS) for each region evaluated (picture 01)^[12]. The cardiac frequency of each one of the volunteers was monitored with a pulse oximeter, during all the procedures. The registers were done before and during the application of the topical agents, on the moment of the needle insertion and after the insertion^[8].

The results were subjected to the variance analysis followed by the Kruskal-Wallis test. The differences were considered significant to a level of 5%. This study was performed on the dependences of the Clínica Odontológica da Universidade Paranaense – Cascavel, PR, being approved by the ethics committee protocol number 0445.0.375.000-10.

III. Result

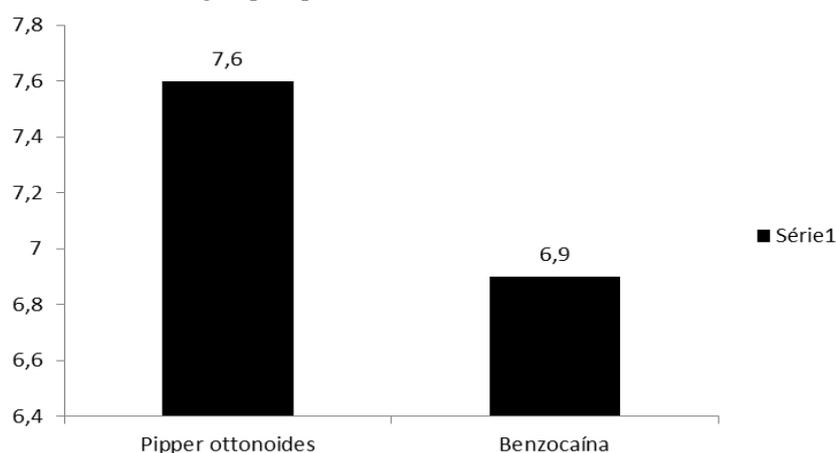
The average level of pain after the utilization of the Piper ottonoides based ointment at 20,5% was of 7,6 and of the benzocaine (positive control) was of 6,9 as it is shown on table 1. The lower the result, lower the pain perception, so, the topical anesthesia is more efficient.

A variance analysis followed by Kruskal-Wallis test showed that there was no significant difference on the effectiveness of the topical anesthesia obtained by the Piper ottonoides ointment application compared to the benzocaine control (P=0,741), as it is shown on picture 02.

Table 1. Average results of visual analogical pain scale. Mean ± standard error

Piper ottonoides 20,5%	Benzocaine
7,6 ± 1,6	6,9 ± 2,0

Table 2. Mean (± S.E.M.) pain index of volunteers of the male and female after the puncture needle in the treatment group (Piper ottonoides c) and control (benzocaine).



IV. Discussion

The results showed that the effects of the anesthesia produced by the Piper ottonoides based ointment at 20,5% did not differ in order to statistically relevant of the benzocaine control, showing its effectiveness at blocking the ache induced by the anesthesia needle puncture.

It is important to emphasize that there are also differences on the characteristics of the many regions of the oral mucosa. Considering the keratinized tissue and the non keratinized area and the effectiveness of the anesthetic in these points. Nusstein et al. (2003) observed that for the inferior alveolar nerve, there was no significant difference in relation to the use or not of the topical anesthetic (Benzocaine 20%) on the region, as so for superior the upper molars area, however, the topical anesthesia showed itself effective on the upper lateral incisors^[13]. Hersch et al. (1996) observed that the lidocaine obtained more success at reduce of pain on the second premolars mucosa region than on the same region on the upper arch^[14]. Nakanishi et al. (1996) agrees with the lack of the efficiency of bezocaine 20% on reduce of pain during the needle insertion in the pterygomandibular raphe area and in the upper first molars area^[15].

During the performing of all the procedures there was no report of adverse reaction caused by the use of the Piper ottonoides based ointment, which suggests that its utilization is secure.

V. Conclusion

Piper ottonoides ointment was effective and secure in reducing pain from needle inserting in a methodology used in the present study.

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Examples follow:

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