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SHORT COMMUNICATION

Oral Candidiasis Treatment with Brazilian Ethanol Propolis Extract

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The Brazilian commercial ethanol propolis extract, also formulated to ensure physical and chemical stability, was found to inhibit oral candidiasis in 12 denture-bearing patients with prosthesis stomatitis candidiasis association. Copyright © 2005 John Wiley & Sons, Ltd.

Keywords: Brazilian green propolis extract; oral candidiasis; antifungal activity.

INTRODUCTION

Propolis has been used as a therapeutic agent by the world population since the time of Hippocrates. It is known that the ethanol extract of propolis (EEP) exhibits some pharmacological activities, such as antibacterial, antiviral, antifungal, antiinflammatory, anesthesic and cytostatic properties (Marcucci, 1995; Kujumgiev *et al.*, 1999; Pereira *et al.*, 2002; Cicala *et al.*, 2003). Propolis from the honey bee is used in folk medicine in the countries of Eastern Europe as an antiseptic and antiinflammatory agent, for healing wounds and burns (Bankova *et al.*, 1992; Valcic *et al.*, 1999). Polyphenolic compounds, e.g. flavonoid aglycones, pinocembrin, phenolic acids and their esters, phenolic aldehydes, have been mainly identified in propolis collected by bees in different regions (Bonhevi *et al.*, 1994). Some flavonoids are considered antimicrobial, such as pinocembrin, galangin, sakuranetin, kaempferol and pinobanksin (Aga *et al.*, 1994; Drago *et al.*, 2000). Other compounds are aromatic alcohols, aldehydes, acids and esters; aliphatic acids and esters; hydrocarbons; terpenoids, diterpenoids, amino acids, sugars, prenylated benzophenones, lignans, kaurenoic acid, triterpenes (lanosterol, cycloarterol, β-amyrine), ferulic acid, phenolic compounds (3-phenyl-4-hydroxycinnamic acid (PHCA), 2,2-dimethyl-6-carboxyethyl-2h-1-benzopyran (DCBE), 3-5-diprenyl-4-hhydroxycinnamic acid (DHCA), 6-propenoic-2-2,dimethyl-8-prenyl-2h-1-benzopyran acid (DPB) (Velikova *et al.*, 2000); triterpenes (lanosterol, cycloarterol, β-ampyrine); ferulic acid (Marcucci *et al.*, 2001). The aim of this work was to verify the topical therapeutic effect of Brazilian green propolis extract on oral candidiasis and compare it with the positive control Nystatin.

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MATERIAL AND METHODS

Propolis. Green propolis was collected from the honey bee *Apis mellifera* in Minas Gerais State, Southeast Brazil. The 20% ethanol propolis extract used in this study was extracted by Pharma Néctar®, Belo Horizonte, Brazil. Crude propolis samples collected by *Apis mellifera* were further dehydrated with a low-vacuum pump, and the extracts of the dried propolis were prepared as described by Koo and Park (1997). The dried propolis samples were ground into fine powder, and 2.0 g of propolis was mixed with 25 mL of 80% aqueous ethanol in a test tube and shaken at 70 °C for 30 min. After extraction, the mixture was centrifuged at 8000 × **g** to obtain the supernatants, which were named EPE. The original EPE was applied topically in candidiasis oral mucosa lesions with a swab.

Patients. Details of patients are reported in Table 1. This research was approved by the UFMG Ethics Committee under number 020-97. Eighteen patients were selected from the UFMG Dentistry School Semiology Clinic. All the patients accepted the assigned treatment after being informed about the goals of the research, they had to sign a responsibility term and 12 received two bottles of the 20% EPE. After the habitual cleaning of the prothesis and the oral cavity, the patient had to dry the infected area using a swab, and then, applied topically the EPE four times a day, for 7 days. The patient's mucosa was reevaluated, morphologically through a periodic acid Schiff (PAS) and biochemistry (Candifast, International Microbio, France) before and after the next treatment. Six patients, two men and four women were the control positive group using a solution of Micostatin®/Nystatin (100 000 UI/mL,

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Table 1. Clinical aspects of patients with oral candidiasis from Clinic of Semiology and Pathology of Dentistry School UFMG participating in this study

Patient	Age (years)	Race	Gender	Prosthesis	Local lesions
ISS	29	B	F	TRDP	Hard palate/soft palate
SVCL	34	W	F	TRDP	Hard palate
AFF	36	W	M	TRDP	Hard palate
GMR	37	W	M	TRDP	Hard palate/soft palate
MIC	39	B	F	TRDP	Hard palate
AFS	71	B	F	TRDP	Hard palate
EGSM	29	W	F	TRDP	Hard palate/soft palate
TMS	31	B	F	TRDP	Hard palate
LMC	33	W	M	TRDP	Hard palate
HL	38	W	M	TRDP/PRDP	Hard palate/alveolar mucosa
SFS	39	W	F	TRDP	Hard palate/soft palate
MCTS	43	W	M	TRDP/PRDP	Hard palate/alveolar mucosa
MJNM	46	W	F	TRDP	Hard palate
RCFR	46	B	F	TRDP	Hard palate
HBS	48	B	M	TRDP	Hard palate
JJAF	50	W	F	TRDP	Hard palate
GRA	56	W	F	TRDP	Hard palate
NMBA	63	W	F	TRDP	Hard palate

F, female; M, male; TRDP, total removable dental prosthesis; PRDP, partial removable dental prosthesis; B, black; W, white.

Bristol-Myers Squibb, Brasil) in the same way as used for the propolis extract. Nystatin is the antifungal of choice for candidiasis treatment. The significance of the results lies in the effect of EPE, when compared with Nystatin, on the presence or absence of lesions after treatment.

RESULTS

In all patients treated with EPE and Nystatin the oral candidiasis lesion was in remission (Table 2).

CONCLUSIONS

Candida albicans is susceptible *in vitro* to EPE (Martins *et al.*, 2002; Kartal *et al.*, 2003). Various antifungals are used in oral candidiasis, however, nystatin is the treatment of choice (Korting, 2003). In this study, all the patients treated with the commercial ethanol propolis extract showed a lesion regression similar to that observed in those patients treated with nystatin. It means that the 20% EPE used, in the therapeutic method assigned in this research is effective in the treatment of the oral candidiasis associated with stomatitis by using prothesis. However, after the treatment using propolis, the patient should change the prothesis to prevent trauma from its bad adjustment and imperfection. The efficacy of EPE in oral candidiasis treatment is of great interest for public health in Brazil. Propolis is cheap and is accessible to the population. Further studies with more significant patient numbers are necessary for the statistical confirmation of these results.

Table 2. Results of *in vivo* patients treatment of oral candidiasis with 20% Brazilian green ethanol propolis extract (EPE) and Nystatin (Nys). Use posology: 4 time/day for 7 days, topic application in local lesion and prosthesis surface

Patient	Antifungal agent	Result
ISS	Nys	+
SVCL	Nys	+
AFF	Nys	+
GMR	Nys	++
MIC	Nys	+
AFS	Nys	++
EGSM	EPE	+
TMS	EPE	++
LMC	EPE	+
HL	EPE	+
SFS	EPE	++
MCTS	EPE	+
MJNM	EPE	++
RCFR	EPE	+
HBS	EPE	+
JJAF	EPE	+
GRA	EPE	++
NMBA	EPE	++

+, total lesion remission after 7 days; ++, total lesion remission after 15 days.

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