

Determination of antimicrobial efficacy of four Ayurveda Local Applications (Pratisarana Yoga) in the management of Periodontal Disease

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Abstract – This study evaluates the antimicrobial activity of four Ayurvedic formulations namely Kushtadi Churna, Swethamanjana Churna, Karanjadi Churna and Dasana Sanskara Churna that are used to treat periodontal diseases as local applications. The objectives are to find out the presence or absence of in-vitro antimicrobial efficacy of these four drugs and to evaluate the antimicrobial efficacy of them using agar well diffusion method. The organisms used for the study are Staphylococcus aureus (ATCC 29213), Methicillin resistant Staphylococcus aureus (ATCC 25923) and clinically isolated Candida albicans. The results of the in-vitro antimicrobial efficacy study reveals that Swethamanjana Churna possesses antimicrobial action against all three tested microorganisms. Kushtadi Churna is effective against S. aureus (ATCC 29213) and MRSA (ATCC 25923) and it is unable to affect the growth of C. albicans. Karanjadi Churna and Dasana Sanskara Churna are effective against S. aureus (ATCC 29213) and C. albicans and not effective against MRSA(ATCC 25923). Fluconazole and Amoxicillin are used as positive controls for the yeast and two bacteria respectively.

Keywords: Periodontal disease, antimicrobial activity, Kushtadi Churna, Pratisarana yoga, Dasana Sanskara Churna

1. INTRODUCTION

Any disorder of periodontium; surrounding and supporting tissues of the tooth can be described as a periodontal disease. (Pihlstrom, et al 2005). Although the name “periodontal disease” usually implies inflammatory disorders of periodontitis and gingivitis caused by the pathogenic microorganisms associated with the biofilm formation and dental plaques that form on the teeth (Albandar, et al, 2002), these diseases can also be developmental, traumatic, neoplastic, genetically transmitted or metabolic.(Armitage,2004)

Periodontal diseases are usually caused by bacteria associated with dental plaques. (Socransky and Haffajee, 1990). When the number of virulent bacteria of the plaque is increasing, the resulting illness is classified as gingivitis which is limited to the gums and the pathogenic, bacteria spread to underlying tissues of oral cavity and destroying the connective tissues of teeth, the condition is called as periodontitis. (Marsh, 2003)

The complications associated with gingivitis and periodontitis can be either bacterial, viral or fungal origin. They can cause painful ulcers and abscesses. (Martínez and Ruiz, 2005)

In Ayurvedic Medicine, certain formulations are used to treat periodontal diseases. *Kushtadi Churna*, *Swethamanjana Churna*, *Karanjadi Churna* and *Dasana Sanskara Churna* are such formulations that are mostly applied on the affected areas of oral cavity.(Bhai.Rat.Mukha Roga)

Although these formulations are time tested, there are no studies have been carried out to evaluate the efficacy of these formulations scientifically. In this study in-vitro determination of antimicrobial efficacy of these four Ayurvedic formulations is conducted using three microorganisms that are commonly associated with periodontal disease complications. The study focuses on the microbial growth inhibition by the four formulations measuring the inhibitory zone diameter.

2. Materials and Methods

2.1 Sample preparation

2.1.1 Kushtadi Churna test sample preparation

Kushtadi Churna (1g) was mixed with sterile distilled water (10 mL)

2.1.2 Swethamanjana Churna test sample preparation

Swethamanjana Churna (1g) was mixed with sterile distilled water (10 mL)