

## REVIEW ON ANTIMICROBIAL ACTIVITY OF *Cassia auriculata*, CHLORHEXIDINE & AMOXICILLIN AGAINST HUMAN SALIVARY MICROFLORA OF MIXED DENTITION AGE GROUP

Rahul R Deshpande<sup>1,3</sup>, Mahesh V Dadpe<sup>1</sup>, Vishwas Patil<sup>1</sup>, Megha V Jadhav<sup>\*1</sup>, Priyanka Mahajan<sup>1</sup>,  
Sucheta A Gaikwad<sup>2</sup> and Nirmala R Deshpande<sup>2</sup>

<sup>1</sup>Dr D Y Patil Dental College and Hospital, Pimpri, Pune, Maharashtra, India.

<sup>2</sup>Dr T R Ingle Research Laboratory, Department of Chemistry, S P College, Pune, Maharashtra, India.

<sup>3</sup>Deenanath Mangeshkar Hospital, Pune, Maharashtra, India.

Received: 1 May 2012; Revised: 18 May 2012; Accepted: 29 May 2012; Available online: 5 June 2012

### ABSTRACT

Dental decay can be prevented. When it does occur, there are effective treatments for preventing the decay from causing pain and eventual tooth loss. This guideline provides members of the dental team, health visitors, community workers, nursery staff, parents, and others with an interest in improving child dental health, with ready access to the best evidence based practice in the prevention and management of dental decay in the pre-school child. Ayurvedic medicine is an Indian ancient art of healthy living. A large segment of Indian population, today continue to prefer Ayurvedic rather than modern medicine. *Cassia auriculata* is an evergreen shrub that grows in many parts of India and in other parts of Asia. The flower, leaves, stem, root, and unripe fruit are used for treatment, especially in Ayurvedic medicine. People uses *Cassia auriculata* for diabetes, eyes infection, joint and muscle pain, constipation, jaundice, liver disease and urinary tract infection and also its antimicrobial activity can be used in dental preventive and therapeutic procedures for example root canal irrigants, mouthwash etc. This study shows antimicrobial activity of *Cassia auriculata* in different extracts at different concentration and also its comparison with other antimicrobial agents like chlorhexidine, s-flo and amoxicillin against human salivary microflora. This study proves that antimicrobial activity of *Cassia auriculata* is comparable with antimicrobial agents tested and can be used as a preventive and therapeutic agents.

**Keywords:** *Cassia auriculata*; antimicrobial activity; salivary microflora.

### INTRODUCTION

Dental decay, also known as dental caries, is defined as a disease of the hard tissues of the teeth caused by the action of microorganisms, found in plaque, on fermentable carbohydrates (principally sugars). At the individual level, caries is a preventable disease. Given its dynamic nature the disease, once established, can be arrested or reversed prior to significant cavitation taking place.<sup>1</sup>

India, a developing country faces many challenges in rendering oral health needs. The majority of Indian population resides in rural areas, of which more than 40% constitute children. These children cannot avail dental facilities due to inaccessibility, financial constraints and stagnation of public dental healthcare services. This entails the health professional to adopt a more practical approach to achieve prevention of oral diseases.<sup>2</sup>

Many efforts have been made to discover new antimicrobial compounds from various kinds of sources such as microorganisms, animals and plants. One of such resources is folk medicines. Systematic screening of them may result in the discovery of novel effective compounds.<sup>3</sup>

#### \*Corresponding Author:

Dr Megha V Jadhav

Dr D Y Patil Dental College and Hospital,

Pimpri, Pune, Maharashtra, India.

Contact no: +91-7507327459; Email: [drmjpedodontist@gmail.com](mailto:drmjpedodontist@gmail.com)

*Cassia auriculata* is one of the important and effective plants of folk medicines. This study proves the antimicrobial activity of *Cassia auriculata* in different extracts and also provides comparable antimicrobial activity with chlorhexidine, s-flo, amoxicillin 125mg and amoxicillin 250mg against human salivary microflora of mixed dentition age group.

### ANTIMICROBIAL ACTIVITY OF *Cassia auriculata*, CHLORHEXIDINE & AMOXICILLIN AGAINST HUMAN SALIVARY MICROFLORA

Antimicrobial activity of *Cassia auriculata* in different extracts at different concentration was studied and a comparison was made with other antimicrobial agents such as chlorhexidine, s-flo and amoxicillin against human salivary microflora. The zone of inhibition were measured by excluding the diameter of well.

From this study, it was evident that the acetone extract has a better antimicrobial activity than the ethanol extract. This antimicrobial activity of '*Cassia auriculata*' may be compared with other 'synthetic' antimicrobial agents.<sup>4</sup>

Table 1 represents mean value of average zone of inhibition of *Cassia auriculata* of ten salivary samples at nine different concentrations. Table 2 represents mean

value of average zone of inhibition of chlorhexidine, s-flo, amoxicillin 125mg and amoxicillin 250mg of ten salivary samples at nine different concentrations. The antimicrobial activity of *Cassia auriculata* is comparable with 0.2% chlorhexidine<sup>5</sup>, s-flo, amoxicillin 125mg and amoxicillin 250mg. These zones of inhibition are directly proportional to the concentration. But to prove the potential of *Cassia auriculata* we need more number of samples but this study gives comparable results as the Statistically, Kruskal-Wallis test followed by post-hoc test proved that all results are comparable as the p value is 0.0001 which is significant ( $p < 0.5$ ).

**Table 1. Mean value of Zones of inhibition at nine concentrations in salivary samples**

Acetone extract of <i>Cassia auriculata</i> (mg)	Mean value of average zone of inhibition
62.5	0.0000
125	0.2000
250	7.4000
500	10.4000
1000	12.4000
2000	13.1000
2500	15.4000
3000	16.0000
4000	16.2000

**Table 2. Mean value of Zones of inhibition in salivary samples**

Antimicrobial agent	Mean value of average zone of inhibition
0.2% chlorhexidine	20.00
s-flo	16.00
Amoxicillin 125mg	40.40
Amoxicillin 250mg	48.40

Table 3 represents Mean value of Zones of inhibition of Active Compound (Emodine) of '*Cassia auriculata*'. Antimicrobial activity of active compound of '*Cassia Auriculata*' is comparable with 0.2% chlorhexidine and S-flo.<sup>6</sup> To prove Antimicrobial activity of active compound against amoxicillin we need to take higher concentrations of *Cassia auriculata*.

## REFERENCES

1. Kidd A M J-B. Essentials of dental caries: the disease and its management. 3rd ed. Oxford; Oxford University Press; 2005.
2. Thomas S, Tandon S Nair; Effect of dental health education on the oral health status of a rural child population by involving target groups. *S J Indian Soc Pedod Prev Dent*. 2000; 18(3):115-25.
3. Tomoko N, Takashi A, Hiromu Y; Antibacterial activity of extracts prepared from tropical and subtropical plants on methicillin resistant *Staphylococcus aureus*. *J Health Sci*. 2000; 48:273-276.
4. Rahul R Deshpande, Ankur A Kulkarni, Megha V Jadhav, Priyanka P Mahajan, Sucheta Gaikwad, Nirmala R Deshpande; Comparative Evaluation of Antimicrobial Activity of Various Extracts of *Cassia auriculata* in

**Table 3. Mean value of Zones of inhibition of Active Compound (Emodine) of *Cassia auriculata***

Concentrations	Mean value of average zone of inhibition
5 mg	0.0000
10 mg	1.4000
15 mg	3.7000
25 mg	4.4000
30 mg	5.2000
50 mg	7.0000
80 mg	10.2000

Nature always stands as a golden mark to exemplify the outstanding phenomena of symbiosis. Natural products from plant, animal and minerals have been the basis of the treatment of human disease. Today estimate that about 80 % of people in developing countries still relays on traditional medicine based largely on species of plants and animals for their primary health care. Herbal medicines are currently in demand and their popularity is increasing day by day. Medicinal plants play an important role in the development of potent therapeutic agents. Therefore the use of Aurvedic medicines has increased now a days.

## CONCLUSION

The antimicrobial activity of *Cassia auriculata* at higher concentration is comparable with 0.2% chlorhexidine, s-flo, amoxicillin 125mg and amoxicillin 250mg. This study has confirmed the antimicrobial potentials of the plant, thus supporting its application as a preventive remedy for various microbial diseases of hard tissues in the oral cavity. The active compound of *Cassia auriculata* has more potential as an antimicrobial agent. However authentic use of this plant as a preventive and therapeutic agent requires much more fundamental study regarding higher concentrations and samples as well.

## ACKNOWLEDGEMENT

The authors express their sincere thanks to Agharkar Research Institute, Pune, India and Deshpande's Oral Health Clinic, Pune, India for valuable support to carry out this research work.

Different Concentration on Human Salivary Microflora. *Journal of Pharmacy Research*. 2011;4(10):3427-3428.

5. Rahul R Deshpande, Ankur Kulkarni, Megha jadhav, Priyanka Mahajan, Sucheta A Gaikwad and Nirmala R Deshpande. Screening of antimicrobial activity of herabal extract of *Cassia auriculata*, chlorhexidine & amoxicillin against salivary microflora of mixed dentition age group. *Pharmacie Globale (IJCP)*. 2011; 12(03):1-3.
6. Jadhav M V, Deshpande R R, Dadape M, Panvalkar P, Kakade P, Nirmala R and Gaikwad S; Comparative evaluation of antimicrobial activity of active components of *Cassia auriculata*, 0.2% chlorhexidine and s-flo in different concentration of human salivary microflora. *International journal biology, pharmacy and allied science*. 2012; 1(3):444-449.