



## Short Communications

### Antibacterial properties of cinnamon stick oil with special reference to *Streptococcus pyogenes* and *Pseudomonas aeruginosa*

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#### ABSTRACT

##### Keywords

Cinnamon stick;  
Antibacterial activity.

*Cinnamomum burmannii* Blume (cinnamon stick) is commonly used in Indian spices. Cinnamon stick oil exhibited significant antibacterial properties. This study suggests that cinnamon oil and its bioactive components have potential for application as natural food preservatives. In the present study, the antibacterial activity of cinnamon stick oil was evaluated against *Streptococcus pyogenes* and *Pseudomonas aeruginosa*.

## Introduction

The spread of food borne pathogens is one of the most serious threats for the human health. In India, *spices* are used not only for cooking, adding color, flavor, taste and it also provide infinite medicinal benefits. Traditionally the people of India have a long-standing practice of using wide variety of herbal products in treatment of diseases or as preservatives in foods. In the past few decades, antibiotic resistance is an emerging problem worldwide (Walsh, 2000; Cohen, 2002). This has lead to the search for new, safe and effective antimicrobial agents from alternative natural resources like plant products. In comparison to chemical or synthetic additives herbal additives are preferred as these are safer, flavor enhancer and without any side effects (Brull and Coote, 1999). Herbal extracts are fast becoming

popular as natural antimicrobial preservatives or additives (Akarpat *et al.*, 2008; Pazos *et al.*, 2008; Cox *et al.*, 2010). Cinnamon is one of the major spices used in India (Das, 2012). *Streptococcus pyogenes* is a very important bacterial pathogen in children and adults causing community-acquired upper respiratory tract infections like tonsillopharyngitis, skin and soft tissue infections which are among the most frequent reasons for seeking of medical advice (Gueye *et al.*, 2009). *Pseudomonas aeruginosa* is well-recognized as a nosocomial pathogen, which exhibits inherent drug resistance (Liu *et al.*, 2007). *Pseudomonas aeruginosa* is an important opportunistic pathogen causing widespread infections by numerous virulence factors. Increasing resistance to antibiotics makes the

*Pseudomonas* infections treatment further difficult (Owlia *et al.*, 2009). The purpose of this study was to evaluate antimicrobial characteristics of Cinnamon stick oil on *Pseudomonas aeruginosa* and *streptococcus pyogenes*.

## Materials and Methods

Cinnamon stick oil was collected from a local herb dealers *i.e.* Tejaswini herbs, Bhopal. Clinical isolates of pathogenic bacterial viz *Streptococcus pyogenes* and *Pseudomonas aeruginosa*. were stored at 4°C. Agar disc diffusion method was used for screening of antibacterial activity of Cinnamon stick oil (Durrafourd, 2002).

## Results and Discussion

The antimicrobial activity of Cinnamon stick oil (*Cinnamomum zeylanicum*) was tested against *Streptococcus pyogenes* and *Pseudomonas aeruginosa*. Both the microbial strains show sensitivity against Cinnamon stick oil. The zone of inhibition was measured to be 1.6 cm and 1.2 cm in 10 µl concentration. Cinnamon oil was found to be a better remedy against *Streptococcus pyogenes* and *Pseudomonas aeruginosa*, which are known for causing respiratory tract infections, skin infection etc. Hence, it represents an alternative source of natural antimicrobial substances for use in food systems to prevent the growth of food-borne bacteria. This study also shows that further research on the effects of spices and essential oils on microorganisms can be rewarding to pursue in the search for new broad spectrum antimicrobial agent.

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