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## Evaluation of antibacterial potential of tea and different herbal plant extracts against *Escherichia coli* and *Staphylococcus aureus*

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*Escherichia coli* is the most commonly found bacteria in the human intestinal tract. *E. coli* is non-pathogenic in normal conditions, but virulent strains such as *Escherichia coli* O157:H7 can cause gastroenteritis, urinary tract infections, neonatal meningitis etc. *Staphylococcus aureus* colonizes the human skin as a part of the normal flora and the most common pathogen causing bacterial infections in hospitalized patients. Further, *S. aureus* causes food borne infections in humans as well as pneumonia, bacteraemia, osteomyelitis, endocarditis, sepsis and toxic shock syndrome. The prevalence of methicillin resistant *S. aureus* (MRSA) and its ability to resist multiple drugs has posed a serious challenge for disease control. Tea is mainly an infusion of leaves of the plant *Camellia sinensis* consumed for centuries as a beverage and is valued for its medicinal properties. It was hypothesized that some herbal teas could also be useful in fighting against some bacteria especially enteropathogens. In the present study, *C. sinensis* tea leaves and plant parts frequently used in herbal tea production, were selected and their aqueous extracts were tested for antimicrobial activity against *E. coli* and *S. aureus*. *C. sinensis* black tea and green tea leaves, flower buds of *Syzygium aromaticum*, stems of *Hemidesmus indicus*, flowers of *Senna auriculata*, *Aegle marmelos*, plant of *Aerva lanata*, inner bark of *Cinnamomum zeylanicum*, and rhizome of *Zingiber officinale* were purchased from domestic markets and herbalists from Mihinthale, Kandy and Kalutara areas. They were air-dried, ground into powder and extracts were made using boiled distilled water, allow to cool at 37°C and tested for its antimicrobial effect against *E. coli* and *S. aureus*, using standard agar-gel diffusion inhibition test. The test bacteria were introduced and uniformly spread on the surface of Mueller Hinton agar plates. After placing 20 µl of extracts into each well, plates were incubated at 37°C for 24 hr and the diameter of the growth inhibition zone around the wells were measured. Comparisons were performed using one-way ANOVA followed by Duncan multiple-range test. Green tea was found to be most effective, followed by black tea, *H. indicus* and *C. zeylanicum* extracts, against *S. aureus*. The tested aqueous extracts did not show antibacterial activity against *E. coli*. It can be concluded that green and black teas as well as tea made by infusing specific parts of *H. indicus* and *C. zeylanicum* can be used to prevent and control diseases caused by *S. aureus*. Further, *E. coli* present in human gastrointestinal tract will not be affected by drinking the tested extracts.

**Keywords:** Antibacterial activity, *Camellia sinensis*, enteropathogens, herbal tea extracts