Testing the antibacterial activity of *Curcuma longa*

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The use of plant parts for different health purposes is common in the world. Growth of microorganisms may be inhibited by the antimicrobial activity of plant extracts. Herbal medicine has been traditionally used by many communities as a source of maintaining good health as well as treatment for various illnesses.

Various sesquiterpenes and curcuminoids have been isolated from the rhizome of *Curcuma longa*. These contribute to a wide array of biological activities including antibacterial activity.

For the experimental studies on antibacterial activity, common food borne pathogenic bacteria namely Gram-positive (*Staphyllococcus aureus, Bacillus*) and Gram-negative (*E.coli, Klebsiella* sp, *Proteus* sp) were used. Various extracts such as fresh rhizome extract, steam distilled extract (fraction I), chloroform extract (fraction II), methanol extract (fraction III) and water extract (fraction IV) were tested for antibacterial activity by well method. The concentration of each fraction used was 2mg/ml. The antibiotics gentamycin and ampicillin were used as positive controls and the activity was calculated for each fraction.

Experimental design was a Completely Randomised Design (CRD) and data were analysed by Least Significant Difference (LSD) at P=0.05 level. There is significant difference ($P<0.05$) in the antibacterial effects of fresh rhizome extract and the fractions. The fresh rhizome extract and fraction III inhibited all the tested bacteria. The fraction I did not have any inhibitory activity against the selected bacteria. The fraction II showed inhibitory activity in the range of 31-45% against *Staphyllococcus aureus, Klebsiella* and *Proteus*. Of all, the fraction III showed highest inhibitory activity (78%) on *Staphyllococcus aureus*. Further studies on the suitable concentrations of the extracts would help upgrade the manufacturing process to develop quality and to maintain standards in the preparation of natural drugs from *Curcuma longa* for food-borne diseases.

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