JOURNAL OF PURE AND APPLIED MICROBIOLOGY, October 2011. Vol. **5**(2), p. 1031-1033

In vitro Study of Antibacterial Potential of Leaf Extract of Two Variety of *Brassica oleracea* Against *Escherichia coli*

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(Received: 23 February 2011; accepted: 29 March 2011)

Crude, chloform and methanol extracts of leaves of two variety of *Brassica oleracea* e.g., *botrytis* and *capitata* were evaluated against *Escherichia coli coli* Crude and alcoholic extracts of variety *botrytis* showed high antibacterial activity against *E.coli.*

Key words: Antibacterial activity, *Brassica oleracea* var *botrytis*, *Brassica oleracea* var *capitata*.

Plant and plant products have been used extensively throughout history to treat medical problems. Numerous studies have been carried out to extract various natural products for screening antimicrobial activity. Traditional medicinal practice has been known for centuries in many parts of the world.

Herbal medicines are gaining growing interest of their cost–effective and eco-friendly attributes. Even though pharmacological industries have produced a number of new antibiotics in the last three decades, resistance to these drugs by microorganisms has increased. Hence more studies pertaining to the use of plants as therapeutic agents should be emphasized especially those related to the control of antibiotic resistant microbes. Vegetables are the most important source of vitamins and minerals needed for the human system. In Indian medicine system Cabbage and Cauliflower are used for the treatment of various diseases from ancient time. Therefore in this context screening of antibacterial properties of *Brassica oleracea var botrytis* and *Brassica oleracea var capitata* against *E.coli* has been done.

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Antifungal properties of some spices plant extracts were described by Shekawat and Prasada (1971). Meera and Sethi (1994) studied the antimicrobial activity of essential oils from spices against various microorganisms including human pathogens. Bohra and Bohra (2008) studied the vegetable plants as antimicrobial agents. Antibacterial activity of extract of leaves of some tree plants against a *Salmonella typhii* were described by Srivastava and Bohra(2005). Elizabeth (2001) studied antimicrobial activity of *Allium sativum* on some pathogenic bacteria. Antimicrobial activityof vascular plants were described by Wickell (1959). Till today very less efforts have been made to test in vitro antibacterial activity of *Brassica* plant against *E.coli* bacteria. In the present paper an attempt has been made to test antibacterial activity of *Brassica oleracea* var *capitata* and *Brassica oleracea* var *botrytis* against *E.coli* bacteria.

MATERIAL AND METHODS

The test organism

Pure cultures of *E.coli* was obtained from the Department of Microbiology, IBB College, Kota Cultures of *E.coli* were maintained on Nutrient agar slants.

Collection of the plant material

Healthy leaves of *Brassica* species were obtained from the local market. After washing and

surface sterilization they were crushed in sterile distilled water/ methanol (20gm in 100ml). Further dilutions (1:1, 1:3, 1:5, 1:7 and 1:9) were prepared from the extract.

Preparation of standard culture inoculum of test organism

3-4 isolated colonies were inoculated in 5 ml Nutrient broth and incubated at 37^{0}C overnight.

Preparation of crude /alcoholic extract

For preparation of crude extract fresh plant was directly crushed for the assay.

Preparation of discs

Whatmann filter paper No. 1 was taken and cut the disc of equal diameter (6mm) with the help of punch. After sterilization disc were dipped in plant extract, they were air dried.

Testing procedure

15ml of nutrient agar was prepared and autoclaved. Then the medium was poured into a sterile Petri-plate under aseptic conditions and allowed to solidify. The bacterial culture (1 ml) was spread on the agar surface using sterile cotton swab. Then the prepared plant extract discs were kept in the petri-plate in which the medium is poured. The plates were incubated at 37^{0}C for 24 hrs. After the formation of zone, the inhibition was measured (in cm) using a scale.

RESULTS AND DISCUSSION

Plants are a valuable natural resource and regarded as potentially safe drugs. The results indicated that extracts of these plants have antibacterial activity against the test bacteria and confirms the traditional medicinal value of these plants. Further investigations such as phytochemical analysis and spectroscopic methods need to be studied for the isolation of the therapeutic antimicrobial compounds. Our results indicated that extracts prepared in methanol solvent consistently displayed better antibacterial activity than other extracts (Fig 1). Similar observations were reported by various workers (Kaushik and Singh 2000) Antibacterial activity of different plants were tested by various workers. (Rafi *et al*., 2005, Nandakumar *et al*., 2006, Parekh and Sumitra,2006., Parekh 2006, Verma, 2006).

Results of the present research were supported by the work done by various workers. The ethanol extract of *Achyranthes aspera* showed effective positive results on *Staphylococcus aureus* (Nandakumar *et al* 2006). Methanol extracts of *Evolvulus alsinoides, E. nummularius and Merrimia tridentata* plant showed antibacterial activity against pathogenic bacteria (Kaladhar *et al* 2009). Similar observations were recorded by various workers (Parekh *et al* 2000).

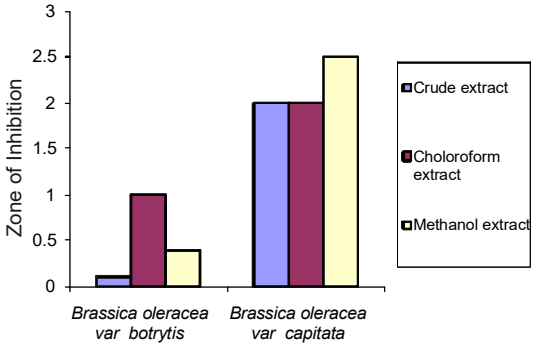

Fig. 1. Graph showing zone of inhibition

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