



Evaluation of Antimicrobial Activity of Various Crude Plant Extract on the Growth of *Salmonella typhi*

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Abstract:

The 20 different plant extract were screened for their antibacterial activity against *Salmonella typhi*. Out of these plants Onion, Jamun, Bel-fruit, mango, ginger and Betel leaf show highest activity and Ocimum leaf and inflorescence, ginger and Pudina (mint) show least activity against *Salmonella typhi*. The inhibition of growth of *Salmonella typhi* is depend on the concentration of active principle like alkaloid, volatile acid, resin, and tannin present in the plant extract. The present study indicates the use of plant extract to control the *Salmonella typhi* infection in man.

Keywords:

Plant extract, *Salmonella typhi*, infection, Betel leaf, antibacterial activity.

Introduction:

Herbal medicines are used in about 75-80% of the world population mainly in the developing countries for primary health care, because of better cultural acceptability, compatibility and lesser side effect in human being. However the last few years there was been major increased use of in the developed world.

The typhoid can one of the commonest infection in India and cause by *Salmonella typhi*. The medicinal plant contain active principle useful for the health of human being (Abou-Zeid A., *et al.*, 1975). Maruzzella and Henery, (1958) has studied the antibacterial activity of some essential oil and oil combination against *Salmonella typhi*, *Micrococcus citrus*, *Proteus morgai*, *Bacillus brevis* using filter paper disc method. Remlinger and Billy, (1942) found that, vapours from cinnamon oils had a bacterial effect on typhoid and paratyphoid bacilli.

The aim of the present project work was to survey the antibacterial activity of the extract of Onion, Jamun, Bel-fruit, Bettle leaves, Mango, Pudina, Ocimum, Ginger, Grape, Clove, Onion, Coconut water which are the ingredient of day to day food against *Salmonella typhi* infection.

Material and methods:

Preparation of plant extracts-

The Plants were collected in healthy condition, washed thoroughly under the running tap water and then with 1% Hgcl₂ solution to remove the dust particles or contamination. Then various part of plant such as leaves and fruits etc. were separated with the help of scissor. The plant parts were cut





into small pieces and their juices was extracted in to mortal and pestle. The extracts were filter through double layer muslin cloth. The extract was use for bioassay.

Preparation of wet disc for antibiotic sensitivity test-

Punch the discs 8 mm in diameter from Whatman No.1 paper , dispensed batches of 25 disc in McCartney bottles and autoclaved at 121° C for 20 mins. Added 5ml plants extract to each bottles.

Isolation of bacteria-

Stool and blood sample was collected and then inoculated on selenite broth medium. Isolated bacterial again grown on XLD and CLED agar for proper growth of bacteria. After overnight incubation at 37°C, a loopful sample was inoculated on TCBS agar plate.

Filter paper disc diffusion technique:

Prepared the lawn of *Salmonella typhi* on the nutrient agar plate and wet disc contain 0.1ml of plant extract and placed on it. Incubated the plate for 24 hours at 37°C and recorded the zone of inhibition.

Results and discussion:

Several antibiotic are currently been used to treat a variety of infectious human diseases have limited antimicrobial spectrum and develop drug resistant in pathogen lead to serious ill effect, plant extract which have broad spectrum antimicrobial activity, which are easily available, effective against human infection and non-toxic to the human being.

The literature indicate number of plant extract have antimicrobial activity. Therefore the plants which are day to day used in the diet are valued as a source of antimicrobial substance. According to Dr. Robert Markarison and as per naturopathy a proper diet is the best medicine

Table 1. Zone of inhibition (mm) of plant extract best four results

Name of plants	1	2	3	4	Average
Grape	13	15	14	15	14.25
Pomegranate	13	13	12	14	13
Turmeric	14	15	12	16	14.25
Jamum	29	27	29	27	28
Coconut	13	14	14	12	13.25
Lemon	12	13	15	11	12.75
Orange	11	12	12	12	12
Onion	29	31	32	28	30
Bel fruit	28	26	26	29	27.25
Carrot	15	14	14	13	13.75
Betel leaf	22	24	24	24	23.5
Mango	29	29	12	28	24.5
Cardamom	00	00	00	00	00
Clove	12	11	26	14	15.75
Ginger	24	26	31	23	26
Jayphal	13	13	13	14	13.25
Jesthmadh	12	13	14	13	13
Lovage	16	16	12	15	14.75
Mint	15	14	17	14	15
Tulsi (ocimum)	15	14	15	14	14.5



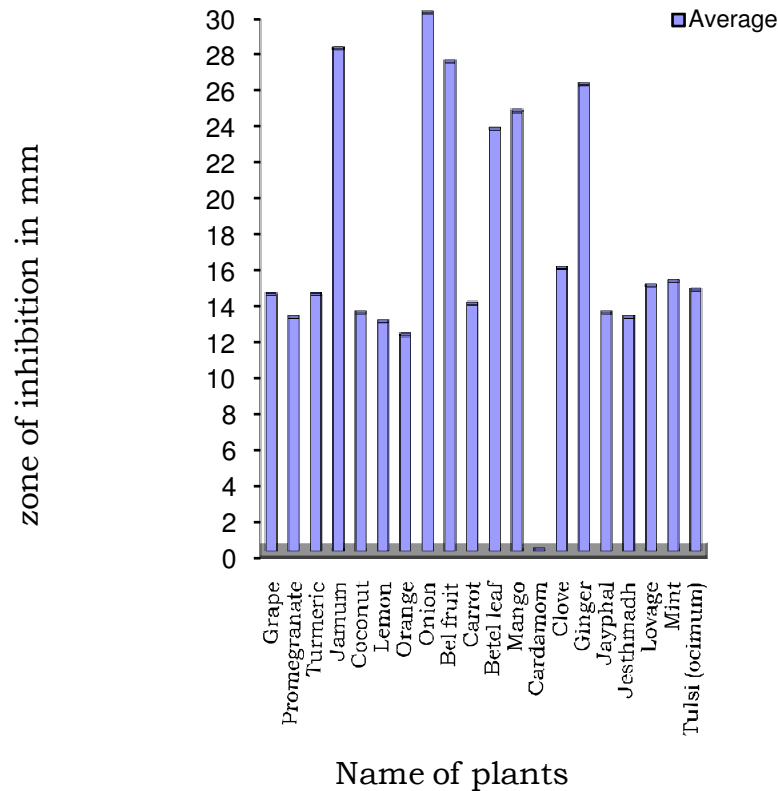


Figure 1. Effect of various plant extract on the growth of *Salmonella typhi*

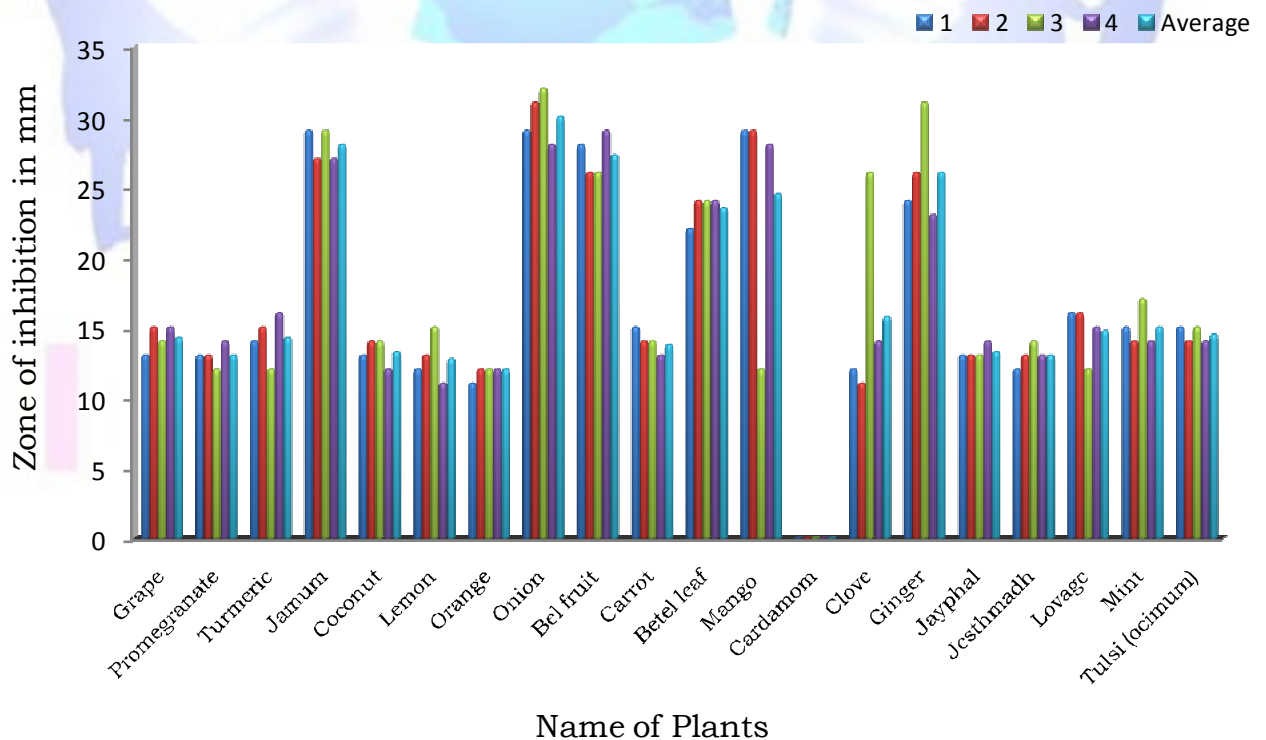


Figure 2. Effect of various crude plant extract on the growth of *Salmonella typhi*

Conclusion:



The extract of onion, jamum, belfruit, mango, ginger and betel leaves showed maximum antimicrobial activity. The, coconut pomegranate, orange, carrot, lemon, turmeric, mint, lovage, clove, jeshmedh, tulsi, grape, showed moderate activity and cardamom show no activity. Therefore study recommends that Onion, Jamum, Belfruit, Mango Ginger Betel leaves can be used as a remedy against typhoid infection.

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