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Comparison of Anti Microbial Activity of Bhallataka Rasayana and its ingredient

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ABSTRACT: Plants have been used for the treatment of diseases all over the world before the advent of modern clinical drugs and are known to contain substances that can be used for therapeutic purposes or as precursors for the synthesis of useful drugs. Thus over 50% of these modern drugs are of natural products origin and as such these natural products play an important role in drug development in the pharmaceutical industry. The microbiological assay is based upon a comparison of the inhibition of growth of micro-organisms by measured concentrations of the antibiotics to be examined with that concentration of the antibiotics to be examined with that produced by known concentrations of a standard preparation of the antibiotics having a known activity.

Semecarpus anacardium and Bhallataka Rasayana both has a more effect towards the all the organism tested. But *Semecarpus anacardium* has more effect on the tested organisms than the Bhallataka Rasayana. *Semecarpus anacardium* has also some what similar effect as the standard drug Nitrofurazone.

KEY WORDS: Natural Product, Microbiological assay, Bhallataka Rasayana, Nitrofurazone.

INTRODUCTION

Plants have been used for the treatment of diseases all over the world before the advent of modern clinical drugs and are known to contain substances that can be used for therapeutic purposes or as precursors for the synthesis of useful drugs. Thus over 50% of these modern drugs are of natural products origin and as such these natural products play an important role in drug development in the pharmaceutical industry.

The inhibition of microbial growth under standardized condition may be utilized for demonstrating the therapeutic efficacy of antibiotics. Any subtle change in the antibiotic molecule which may not be detected by chemical methods will be revealed by a change in the ant microbial activity and hence microbiological assays are very useful for resolving doubts regarding possible change in potency of antibiotics and their preparations.

The microbiological assay is based upon a comparison of the inhibition of growth of micro-organisms by measured concentrations of the antibiotics to be examined with that concentration of the antibiotics to be examined with that produced by known concentrations of a standard preparation of the antibiotics having a know activity.[1,2,3,4]

EXPERIMENTAL

PREPARATION OF EXTRACT:

100g of powder of Bhallataka Rasayana formulation, *Semecarpus anacardium (*After shodhana), *Embelia ribes* and *Zingiber officinale* were extracted with Methanol using soxhlet apparatus. The extracts were concentrated and air-dried.

PREPARATION OF SAMPLE EXTRACT:

All the extracts above mentioned was made at the concentration of 500 µg/50 µl in DMSO.

COMPOSITION OF MEDIUM [1]:

Agar	15 %
Peptic Digest of Animal Tissue	5 %
Sodium chloride	5 %
Bees extract	1.5 %
Yeast extract	1.5 %
Final pH (After Sterilization)	7.5 ± 0.2
Distilled water up to	1000 ml

TEST ORGANISMS:

- *Staphylococcus aureus*
- *Pseudomonas aeruginosa*
- *Bacillus subtilis*
- *E. coli*

METHODOLOGY

Requisite quantity of the liquid agar media was poured in the sterile Petri dish to give a depth of 3 to 4 mm under the sterile condition. After a solidify the liquid media test organism was spread over the solidified agar media and incubate the Petri dish at 37° C for 24 hours to grow the microorganism [1]. With the help of the sterile steel rod make a hole on the media and poured the known concentration (500 µg/50µl) test solution in that hole. Repeat the same procedure for the standard drug (Nitrofurazone).

Measured the zone of inhibition of the both of the test solution as well as the standard antibiotics solution up to 24 hours.

RESULT & DISCUSSION

The results of antibacterial investigations are given in Table 1, which indicate that different bacterial species exhibited different levels of sensitivities towards the different tested drugs.

From Figure 1 we can conclude that *Bacillus subtilis* showed maximum sensitivity towards *Semecarpus anacardium* while *Zingiber officinale* had not any effect on the *Bacillus subtilis*.

From Figure 2 we can conclude that *Pseudomonas aeruginosa* showed maximum sensitivity towards *Zingiber officinale* while *Embelia ribes* had not any effect on the *Pseudomonas aeruginosa*.

From Figure 3 we can conclude that *Staphylococcus aureus* showed maximum sensitivity towards *Semecarpus anacardium* while *Embelia ribes* had not any effect on the *Staphylococcus aureus*.

From Figure 4 we can conclude that *E.coli* showed maximum sensitivity towards *Semecarpus anacardium* while *Zingiber officinale* and *Embelia ribes* had not any effect on the *Bacillus subtilis*.

Table: 1 Comparisons of zone of inhibition of Methanolic extract of Bhallataka Rasayana, *Semecarpus anacardium*, *Embelia ribes* and *Zingiber officinale* with the Nitrofurazone

Test Drug	Concentration (µg/50 µl)	B.S. *	P.A. *	S.A*	E.C. *
S. anacardium	**500 µg**	18	16	18	19
Embelia ribes	**500 µg**	12	--	--	--
Zingiber officinale	**500 µg**	--	20	15	--
Bhallataka Rasayana	**500 µg**	12	12	13	12
Nitrofurazone	**500 µg**	22	20	20	27

B.S. - Bacillus subtilis **P.A. –** Pseudomonas aeruginosa
S. A. - Staphylococcus aureus **E.C. –** E. coli
* All figures are in mm

Figure 1 Comparision of zone of inhibition of methanolic extract of *Semecarpus anacardium*, *Embelia ribes*, *Zingiber officinale*, Bhallataka Rasayana with Nitrofurazone on *Bacillus subtilis*

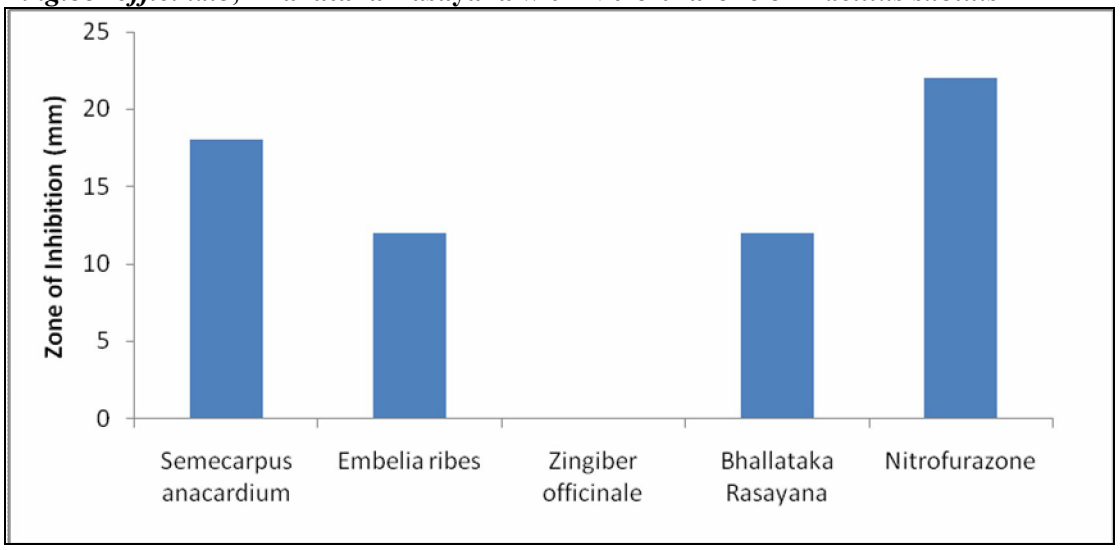


Figure 2 Comparision of zone of inhibition of methanolic extract of *Semecarpus anacardium*, *Embelia ribes*, *Zingiber officinale*, Bhallataka Rasayana with Nitrofurazone on *Pseudomonas aeruginosa*

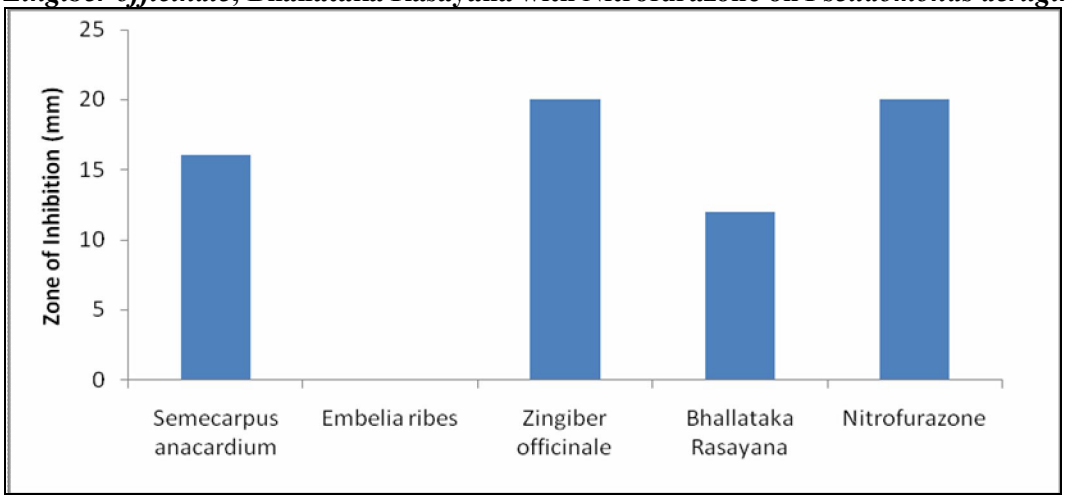


Figure 3 Comparision of zone of inhibition of methanolic extract of *Semecarpus anacardium*, *Embelia ribes*, *Zingiber officinale*, Bhallataka Rasayana with Nitrofurazone on *Staphylococcus aureus*

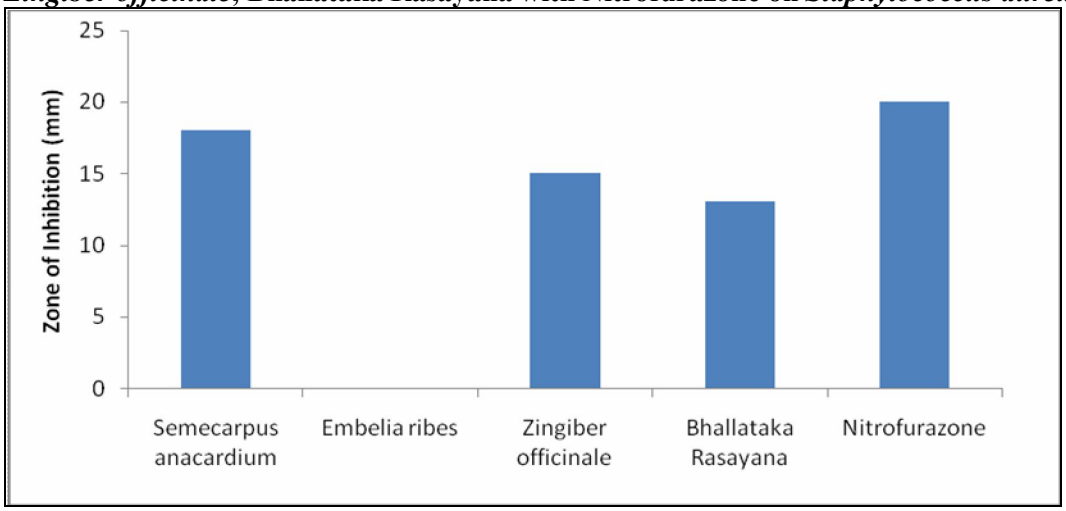
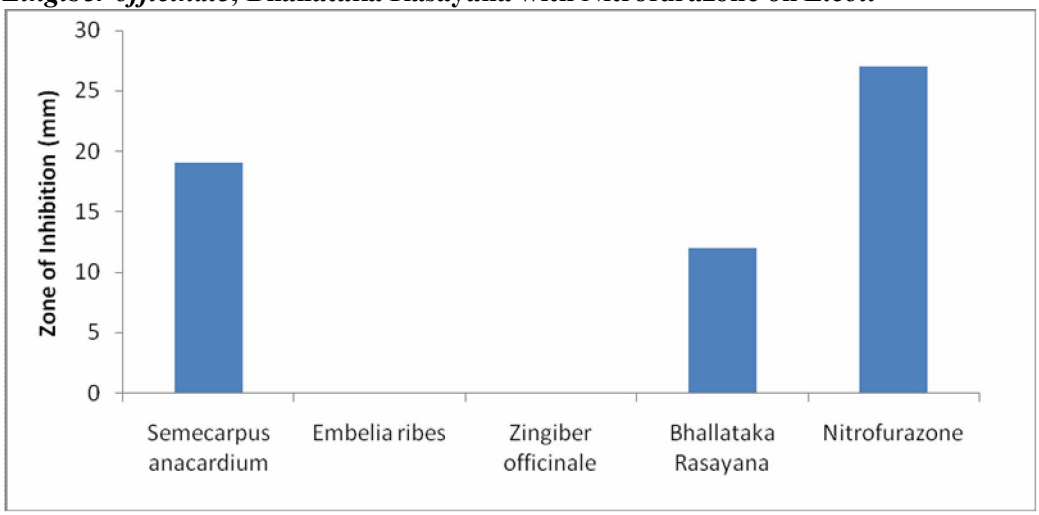


Figure 4 Comparision of zone of inhibition of methanolic extract of *Semecarpus anacardium*, *Embelia ribes*, *Zingiber officinale*, Bhallataka Rasayana with Nitrofurazone on *E.coli*



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