

Antibacterial activity of rice bran oil

Dey Arpan, Jain Praveen and Singh Ajay*

G.D Rungta College of Science and Technology, Kohka, Bhilai, (C.G.), India.

Abstract

Edible oils are widely used. These edible oils have unimaginable medicinal and Pharmaceuticals properties. The oils possessing antimicrobial activity can be employed against human pathogens. Investigations into the antimicrobial activities, mode of action and potential uses of oils have regained momentum. There appears to be a revival in the use of traditional approaches for protecting livestock and food substances from pathogens, pest and spoilage in developing countries. The aim of the present investigation is to assess the anti-bacterial activity of the rice bran oil, so that the intake of rice bran oil might promote human health by preventing bacterial pathogenesis. The bacterial cultures are supplied with rice bran oil (commercially available in the market) and culture conditions are maintained as the normal protocol. The studies reveal antibacterial effect. And inhibition is of permanent nature as petridishes are not found to be infected with any other colony for 5 continuous days.

Keywords: Antibacterial activity, rice bran oil.

INTRODUCTION

Anti-fungal and anti-bacterial activity of Coconut and saffola oil were proved as a good microbial inhibitors.(Uma Maheshwari *et al* 2007).The refined oil was found to show good to moderate activity against disease causing bacteria viz., *Shigella dysenteria*, *Staphylococcus aureus* and *Salmonella typhi* (Majid *et al* 2004).It has been suggested that selected plant essential oils are proved to be having good antibacterial activity against *E.coli*.(Burt *et al* 2003).Essential oils of plant containing ketones and alcohols have been proved to be good microbial inhibitors(Hethelyi *et al* 1989;Gopal *et al*.1990). The wide availability of rice bran oil inspires us to test the competitive antibacterial activity of the oil against *E.Coli* , *Pseudomonas aeruginosa* and *Staphylococcus aureus*.

MATERIALS & METHODS

Anti-bacterial activity was tested against randomly selected strains such as *E.coli*, *Pseudomonas aeruginosa*, *Staphylococcus aureus*, isolated from RUNGTA Dental College, Bhilai, Chhattisgarh.The commercial rice bran oil was obtained from market(Vidya shree refined oil packed in pouch). To analyse the antibacterial activity of the oil, the well diffusion method was used (Bauer *et al* 1966).Each organism was maintained in a respective culture medium and recovered for testing by sub culturing on a fresh media. The nutrient agar medium was sterilized and 15 ml of media was poured into a sterilized petriplate. The agar was allowed to be solidified for 15-20 min. With the help of puncher syringe well was

formed on solidified agar then oil was poured in well of the solidified agar containing petriplates. Petriplates were later incubated at 37°C for 24 hours. The zone of clearance (circle of growth inhibition) was measured in millimeters and standard antibiotic preparation of Gentamycin was used as reference Standard.

RESULTS AND DISCUSSION

The activity of the components of oil is expected to be related to the antibacterial nature as it inhibits the growth of bacterium in vitro. And inhibition is of permanent nature as petridishes were not found to be infected with any other colony for 5 continuous days. The results of antibacterial activity of rice bran oil are summarized in the following table.

Table 1. Anti- bacterial activity of edible oil (Rice bran oil)

S.NO.	Bacteria	Gentamycin (µg)	Average Diameter of the inhibition Zone(mm) (zone of clearance) by Rice Bran Oil
A1	<i>E.Coli</i> .	20mm	25mm
A2	<i>Pseudomonas aeruginosa</i> .	22mm	18mm
A3	<i>Staphylococcus aureus</i>	12mm	Nil

Gram (-): *E. coli*, *Pseudomonas aeruginosa*,
Gram (+): *Staphylococcus aureus*
Gentamycin – The reference standard antibiotic.

*Corresponding Author

Singh Ajay
G.D Rungta College of Science and Technology, Kohka, Bhilai, (C.G.), India.

Email: singhajay@gmail.com

Photographs showing Zone of clearance

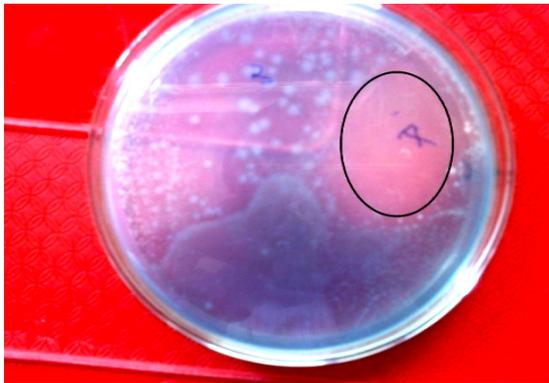


Fig. A1(Inhibition zone against *E.Coli.*)



Fig. A2(Inhibition zone against *Pseudomonas aeruginosa*)



Fig. A3 (Inhibition zone against *Staphylococcus aureus.*)

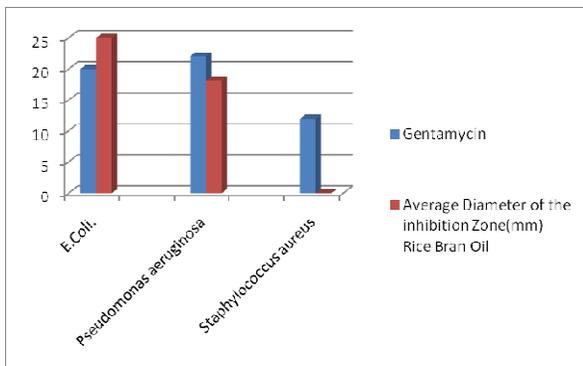


Fig. Bar Graph of Anti- bacterial activity of edible oil (Rice bran oil)

REFERENCES

- [1] Burt, S.A. and Reinders, R.D. 2003. Anti-bacterial activity of selected plant essential oils against *E.coli*.0157: H7. *Letters in Applied Microbiology* 36,162-167.
- [2] Dorman, H.J.D. and Deans, S.G. 2000. Anti-bacterial agent from plant: anti-bacterial activity of plant volatile oils. *Journal of applied Microbiology* 88, 308-316.
- [3] Dubey, N.K. and Mishra, A.K. 1990. Evaluation of some essential oils against Dermatophytes. *Indian Drugs* 27,525-531.
- [4] Gopal, R.H., Vasanth, S. and Kund, A.B. 1990. Anti-bacterial activity of essential oils of *Vicor indica*. Proceeding of 42nd Indian Pharmaceutical Congress, 28-30 Manipal.
- [5] Hethelyi, E., Koczka, I. and Tetenyi, P. 1989. Phytochemical and antimicrobial analysis of essential oils. *Herba hungarica* 28:99-115.
- [6] Lemos, T.L.G., Matos, F.J.A., Alenar, J.W. and Chesney, J.D. 1990. Antimicrobial activity of essential oils of Brazillian plant. *Phytotherapy Res.*8, 82-84.
- [7] Lezcano, I., Nunez, N., Gutierrez, M., Molerio, J., and Diaz, W. 1998. Activated *in vitro* del aceite de girasolozanizado (oleozon) frente a different species bacterianas. *Revista CLENIC ciencias Biologicas* 29, 46-49.
- [8] Majid, M.A., Rahman, I.M.M., Shipar, M.A.H. and Chowdhury, R. 2004. Physico-chemical Characterization, Anti-microbial activity and Toxicity analysis of *Swietenia mahagoni* seed oil. *International Journal of Agriculture and Biology.* 350-354.
- [9] Sherma, V.D., Prasad, G., Singh, A.K., Kala and Gupta, K.C. 1985. Anti-bacterial activity of essential oils of *Illicium vermun hook*. *Indian Journal. Microbiology*, 25, 221-222.
- [10] Uma Maheshwari, S and Vijayalkshmi, G.S. 2007. Anti-fungal and Anti-bacterial activity of Coconut and Saffola oils. *Journal Exotoxicology, Environmental Monitoring.* 17(12), 198-195.