

ANTIBACTERIAL ACTIVITY OF ETHANOL LEAF EXTRACT OF PURSLANE (*Portulaca oleracea*) AGAINST *Salmonella typhi* AND *Shigella dysenteriae*

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ABSTRACT

The research has been conducted to examine antibacterial activity of ethanol leaf extract of Purslane (*Portulaca oleracea*) against *Salmonella typhi* and *Shigella dysenteriae* determined by growth on Mueller-Hinton media (in vitro). The research used a posttest-only control group design which used eight times dilution of ethanol leaf extract of Purslane (1 g/ml; 0,5 g/ml; 0,25 g/ml; and 0,125 g/ml). A solution of 0.5 % CMC-Na was used as a negative control. The positive control for *Salmonella typhi* Chloramphenicol and Siprofloksasin suspension served as positive controls for *Shigella dysenteriae*, respectively. The results showed that all concentrations of ethanol leaf extracts of Purslane affected the zone of inhibition against *Salmonella typhi* and *Shigella dysenteriae*. The extract with concentration of 1 g/ml showed the greatest zone of inhibition against *Salmonella typhi* (60.25 cfu/ml) and *Shigella dysenteriae* (25.125 cfu/ml); concentration of 0.5 g/mL (88.25 cfu/ml and 30.125 cfu/ml), concentration of 0.25 g/ml (146 cfu/ml and 38.25 cfu/ml) and concentration 0.125 g/mL (204.25 cfu/ml and 48.25 cfu/ml).

Key Words : Purslane (*Portulaca oleracea*) leaf extract, *Salmonella typhi*, *Shigella dysenteriae*, Mueller Hinton media

INTRODUCTION

Infectious diseases has become Indonesia's most common health problem especially typhoid fever and diarrhea caused by *Salmonella typhi* and *Shigella dysenteriae*. (Hadinegoro, 1999). Based on intensive and longitudinal epidemiological research of typhoid fever by Simanjuntak (1993) in Paseh, West Java, showed that the incidence of typhoid fever in semiurban area was 357,6 cases per 100.000 people in a year, 77% are 3-19 years old with the highest incidence are 10-15 years old.

Because of high treatment cost and resistance of standard antibiotic we need to find alternatif ways treating those disease, one of them are using herbal medicine. Research by Bae (2004) showed that Purslane (*Portulaca oleracea*) has an antibacterial effect against positive gram *Bacillus cereus* and negatif gram *Pseudomonas aerogenosa*, *Eschericia coli* and also antibacterial effect against *Staphylococcus aureus* and *Bordetella bronchiseptica* (Shahidi *et al.*, 2004). Another research by Bongoh *et al.* (2000) showed that Purslane (*Portulaca oleracea*) has an antifungal effect against

Candida albicans and *Aspergillus niger*.

Flavonoid responsible for this antibacterial and antifungal effect (Cowan, 1999). Quercetin, a flavonol form of flavonoid, is the greatest compound inside Purslane and it has the greatest antibacterial effect. It also has antihistamin, antiinflamatory, antiviral, and also cancer prevention activity. (Basile *et al.*, 2000; Gutzeit *et al.*, 2005; Jegtvig, 2008).

METHODS

To show antibacterial activity of ethanol leaf extract of Purslane (*Portulaca oleracea*) against *S. typhi* and *S. dysenteriae in vitro*, macro broth dilution sensitivity test Method were used (Suswati dan Mufida, 2007), combined with drop plate method (Herigstad, *et al.*, 2001; Miles dan Misra, dalam Boyle, *et al.*, 2008). The research used a posttest-only control group design which used eight times dilution of ethanol leaf extract of Purslane (1 g/ml; 0,5 g/ml; 0,25 g/ml; and 0,125 g/ml). A solution of 0.5 % CMC-Na was used as a negative control. The positive control for *S. typhi* Chloramphenicol and Siprofloksasin suspension

served as positive controls for *S. dysenteriae*, respectively (Notoatmodjo, 2005).

RESULT

After incubate for about 24 hours in 37° C, each disc were observed by counting the ammount of the growth of the colony manually using *Colony counter*. The result are shown on figure 1.

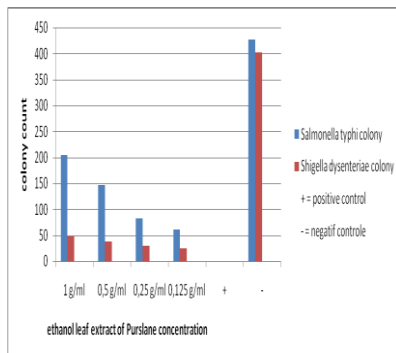


Figure 1. *Salmonella typhi* and *Shigella dysenteriae* Colony count

DISCUSSION

The results showed that all concentrations of ethanol leaf extracts of Purslane affected the zone of inhibition against *S. typhi* and *S. dysenteriae*.

The extract with concentration of 1 g/ml showed the greatest zone of inhibition

against *S. typhi* (60.25 cfu/ml) and *S. dysenteriae* (25.125 cfu/ml); concentration of 0.5 g/mL (88.25 cfu/ml and 30.125 cfu/ml), concentration of 0.25 g/ml (146 cfu/ml and 38.25 cfu/ml) and concentration 0.125 g/mL (204.25 cfu/ml and 48.25 cfu/ml). LSD test showed significant result on antibacterial effect of ethanol leaf extract of Purslane against *S. typhi* and *S. dysenteriae*.

CONCLUSION

The conclusion of this research is that all concentrations of ethanol leaf extracts of Purslane have significant antibacterial effect. The higher the concentration the greater the antibacterial effect.

However it is need to do some following research on *Phytochemical* test of active compound inside purslane leaf (*P. oleracea*) especially quercetin then spesifically tested with antibacterial activity test against *S. typhi* and *S. dysenteriae*.

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