In-Vitro Antimicrobial Activity of Ethnoveterinary Herbal Preparation for Mastitis

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Abstract

Herbal formulations are suitable for treating a wide range of infections and diseases in animals. Ethno-veterinary medicine based on locally available medicinal plants provides various options than synthetic drugs. In the present study the extract obtained from the fresh herbal formulation for mastitis was found to exhibit antimicrobial activity against clinically important field isolates.

Keywords: Mastitis; Aloe vera; *Curcuma longa; In -vitro* Antimicrobial activity

Material and Methods

Aloe vera and *Curcuma longa* of herbal formulation were collected from Thanjavur District, Tamil Nadu, India.

Extractive value determination

Five gram of the air dried raw drugs were coarsely powdered and macerated with 100ml of solvents (Water, Ethanol, Ethyl acetate, PET and Chloroform) in flasks for 24 hours. The flasks were shaken frequently for 6 hours and allowed to stand for 18 hours. They were filtered rapidly taking precautions against loss of solvent. 25ml of the filtrate was evaporated in a tarred shallow dish at 105 °C and weighed. The percentage of extractable matter was determined in triplicate following the procedures given in the Indian pharmacopoeia (1996).

Determination of antimicrobial activity

The microorganism, (*E. coli, S. aureus* and *P. aurogenosa*) were isolated from the field and maintained in Veterinary University Training and Research Center Thanjavur of TamilNadu Veterinary and Animal Sciences University (TANUVAS). Modified agar diffusion method and the zone of inhibition were used for determination of antimicrobial activity of the extracts against the selected microorganisms. Bacterial Strains grown on nutrient agar at 37 °C for 18 hours were suspended in saline solution (0.9% NaCl) and the suspension was used to inoculate. 200μl of the extract were poured into each wells made on nutrient agar. The plates were incubated at 37 °C for 24 hours. Antibacterial activities were evaluated by measuring the inhibition zone diameters.

Results and Discussion

Ethanol (21.33±0.060) and that of aqueous extract (0.33±0.45) yielded the maximum extractive percentage (Table 1). The antimicrobial activity assayed in-vitro using agar well diffusion method against *E. coli, S. aureus* and *Pseudomonas aurogenosa* is given in Table 2. Aqueous, ethanol and ethyl acetate extracts exhibited potential antimicrobial activity against the three pathogens (Table 2). Praveen et al. [1] have reported that their poly herbal formulation showed antimicrobial activity (0.8mm) against *S. aureus.* Another study using Aloevera formulation showed 20mm and 25mm zone of inhibition against *E. coli, S. aureus*, respectively [2,3]. The biological actions and medicinal applications of turmeric and curcumin is also reported [4,5].

Table 1: Percentage Yield of Crude Extract.

Name	Extractive Value In Percentage				
	Aqueous	ethanol	Ethyl acetate	Pet. ether	Chloroform
Anti mastitis formulation	10.33±0.45	21.33±0.06	3.82±0.38	0.55±0.27	0.98±0.78

Table 2: Antimicrobial Activity.

		Zone of Inhibition (mm)				
Sample	Organism	Aqueous	Ethanol	Ethyl Acetate	Pet. Ether	Chloroform
Anti mastitis formulation	E.coli	12±0.25	13±0.36	10±0.07	0	0
	S. aureus	14±0.72	14±0.52	12±0.38	12±0.65	14±0.47
	P. aurgenosa	12±0.48	12±0.35	16±0.42	12±0.24	0

Conclusion

The extracts of herbal formulation against mastitis had inhibitory activity against *E. coli* and *S. aureus*. This indicates that the time tested herbal formulations can be an alternative to antibiotics and other chemical drugs in treating mastitis and will help to reduce the antibiotic residue-free milk and to combat antimicrobial resistance.

References

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