

Evaluation of antibacterial and anti-fungal activities of marketed antidandruff shampoos

Abstract

The aim of study was to investigate in vitro antibacterial and anti fungal activities of anti dandruff shampoos by cup plate (well diffusion) method against three bacterial and three fungal pathogenic cultures . Two different concentration were use to screen the antibacterial and anti fungal activities of shampoos . Result show that antibacterial effect of that shampoo was low and anti fungal effect was remarkable due to synergistic action of its ingredients such a zinc pyrithione , ketoconazole and selenium sulfide .

INTRODUCTION

Despite remarkable progress in human medicine , infectious diseases caused by bacteria , fungi , viruses , and parasites are still a major cause of morbidity and mortality particularly in developing countries [1] . Shampoo is hair care product used for removed of oils , dirt, dead skin particles , dandruff ,environmental pollutants and other contaminated particles that gradually build up in hair [2] . Shampoos are generally composed of clearing agent (surfactant) , conditioning agent , special care ingredient and additives [3]. Antidandruff shampoos may contained active ingredients like zinc pyrithione , ketoconazole and selenium sulfide which are responsible for antibacterial and anti fungal activities . In addition to type and concentration of active ingredient , the efficacy of a shampoo is also influence by formulation [4-7] .

Material and Methods

The shampoos with antidandruff activity available in market . Five different types three of them are marketing and tow are medicine were select and procured from retail pharmacy .

Preparation of test solution

0.5 ml and 1 ml from each shampoo was diluted to 100 ml using sterile distill water in sterile area . These dilutions of antidandruff shampoo were subjected to antibacterial and anti fungal screening .

Test organisms

The bacterial cultures such as staphylococcus aureus , klebsiella , and pseudomonas aeruginosa . Fungal cultures such as candida albicans ,candida parapsilosis and candida krusei .

Culture media

The media use for antibacterial and anti fungal testing was nutrient agar and sabouraud's dextrose agar , respectively of HiMedia pvt . Ltd .,Mumbai _400 086 .

INOCULUM PREPARATION

Bacterial and fungal cultures were maintained in slants of nutrient agar and sabouraud's dextrose agar , respectively , in-the refrigerator . The cultures were prepared by inoculating loopful of suspension from 24 to 48 hours old slant to nutrient broth (for bacteria) and sabouraud's dextrose broth (for fungi) and incubated at 37 C for 24 hours .

Particular volume of enriched broth was diluted with sterile saline such that turbidity of resulting suspension of organism matches with 0.5 Mcfarland Standard which corresponds to 1.5×10^8 CFU per ml [8] .

antibacterial and anti fungal screening

Shampoos were tested for antibacterial and anti fungal activities by cup plate method using three bacterial cultures and three fungi cultures . [9] 20ml of nutrient agar and sabouraud's dextrose agar each of which was proud in presterilized petri plate and was allowed to solidify . 0.1ml of bacterial\ fungal suspension spread on plate , uniformly , using glass spreader or glass slide . After solidification the well/cups were bored in agar plate over layered with test organism , using sterile cock borer in order to make 4 well (10mm) in diameter at the a spaced out position in petri plate . All well filled with 0.1 ml of each dilution of shampoos . These agar plate were set aside at room temperature for 15 to 30 minuets for diffusion and then incubated at 37 C for 24 hours . After incubation the diameter of inhibition was measured in mm . Diameter of borer was subtracted from each reading and mean value of three reading was recorded [9,10] .

Sr no	Name of organism	Shampoo1		Shampoo2		Shampoo3		Shampoo4		Shampoo5	
		0.5	1	0.5	1	0.5	1	0.5	1	0.5	1
1	Pseudomonas aeruginosa	0	0	0	0	0	0	0	0	0	0
2	Klebsiella	0	0	15mm	15mm	0	0	0	0	0	0
3	Staphylococcus aureus	0	0	15mm	0	0	0	0	0	0	0
4	Candida parapsilosis	15mm	20mm	0	0	0	25mm	0	0	0	0
5	Candida.krusei	0	25mm	0	0	9mm	0	0	0	15mm	18mm
6	Candida Ablicans	10mm	12mm	0	18mm	0	0	10mm	20mm	200mm	10mm

All the Shampoos were tested for antibacterial and antifungal activities in terms of zone of inhibition. From table 1 it is clear that all the marketed antidandruff shampoos which are used to treat scalp, itching and irritation have some antibacterial activities and antifungal .

CONCLUSION

It is concluded that excellent action of antidandruff shampoos is due to synergistic effect of its ingredients such as zinc pyrithione, ketoconazole and selenium sulfide. Since these shampoos have substantivity for the human scalp, they may be useful as adjunctive therapy to drugs which are used in the treatment of scalp infections.

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