WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.084
Volume 8, Issue 11, 1461-1465. Research Article ISSN 2277– 7105

EVALUATION OF ANTIMICROBIAL ACTIVITY OF SHUKTI MARIT HARATALA BHASMA WITH PANCHATIKTA CHURNA

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Article Received on
19 August 2019,

Revised on 09 Sept. 2019,
Accepted on 30 Sept. 2019,

DOI: 10.20959/wjpr201911-15998

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ABSTRACT

Hartala is one of the mineral drug, which contains 61% of arsenic. With proper process like shodhana and marana it is recommended for therapeutically use in various diseases like kushta, vaatrakta, arsh, apsmar, etc. Analysis of Shukti Marit Haritala bhasma with Panchatikta Churna contributes towards the establishment of standards for standardization. Assessment of its antimicrobial activity provides scientific evidences for Kustaghna property in particular. Shukti Marit Haratala Bhasma was prepared as per Rasa tarangini and subjected to Antimicrobial activity by cup-plate method, against Staphylococus Aureus, Pseudomonas Aeruginosa, Candida albicans, Aspergillus Niger organisms, results were compared with standard drugs. Shukti Marit Haratala Bhasma test drug samples demonstrated significant Zone of inhibition against organism Aspergillus Niger only. Shukti Marit Haratala and Shukti Marit Haratala Bhasma with Panchatikta Churna samples has shown significant antifungal activity against Aspergillus Niger only but not the antibacterial activity.

KEYWORDS: Shukti Marit Haratala bhasma, Antimicrobial activity, cup plate method, micro organisms.

INTRODUCTION

Utilization of metal, minerals in the treatment of chronic diseases have been employed since Samhita period. Rasaoushadhis i.e. medicines prepared from rasadravyas (metals, minerals) were found very effective for therapeutic efficacy in minute doses and also for the preservation and promotion of positive health, prevention of diseases which is the primary aim of Ayurveda. Apart from that they are popular because of their less dosage, quick result & not having any taste like bitterness[1] compared to herbal formulations.

Haratala is mentioned in Uparasa.[2] Its chemical formula is AS_2S_3 that is arsenic trisulfide and also called as orpiment. Which contains 61% of arsenic in raw state and considered to be a poisonous drug. Haratala has utilised as medicine since Charaka Samhita[3] and Sushruta Samhita[4] but it was limited only for external use only.

During Rasakal elaborated description and use of Haratala of various diseases both internal & external can be observed. Haratala is mainly indicated in various skin diseases. Haratala possesses the Ushna property and cures the Kapha Vikaras and Rakta Vikaras. It is clearly mentioned that haratal bhasma[5] prepared with shukti bhasma & dispensed along with panchatikta churna has high efficacy in kustha.[6]

OBJECTIVES

1. To evaluate Antibacterial and Antifungal activity of Shukti Marit Haratala Bhasma, Panchatikta Churna, and Shukti Marit Haratala Bhasma with Panchatikta Churna.
2. To compare Antibacterial and Antifungal activity of standard drugs ciprofloxacin & fluconazole with test drug samples i.e Shukti Marit Haratala Bhasma, Panchatikta Churna, Shukti Marit Haratala Bhasma with Panchatikta.

MATERIALS AND METHODS

I. Materials

1. Pharmaceutical study: shodhita Haratala, Shukti bhasma, Kumari Swarasa, etc.
2. Antimicrobial Study: Panchatikta Churna, Shukti Marit Haratala Bhasma with Panchatikta Churna, Ciprofloxacin (standard drug for antibacterial), Flucanazole (standard drug for antifungal) micro organisms.

II. METHODS

1. Pharmaceutical study[7]: bhasma was prepared according to the method mentioned in Rasa Tarangini 11 chapter, 35 to 41 sloka equal quantity of Shodhita Haratala and Shukti

Bhasma was taken in Khalwayantra and Bhavana with Kumari Swarasa was given for 3 hours. After giving Bhavana when yellow coloured doughy mass become semisolid, the Chakrika's were and kept for drying. After complete drying of Chakrika's they were kept in earthen Sharavas and covered with another earthen Sharava. After this sandhibandhan was carried out by cotton cloth smeared with mulatani mitti and again kept for drying. On drying of sharavas, laghuputa was given to it, to obtain the Haratala Bhasma. To attain the Bhasma Siddhi lakshanas this procedure was repeated for another two times. After which greyish white coloured soft Haratala Bhasma was obtained.

2. Antimicrobial study[8]: cup plate method

The microbial assay was based upon the comparison of the inhibition of growth of micro organisms by 50, 150, 200, 250 mg/ml concentration of the test drug haratal bhasma to be examined with that produced by 1 mg/ml concentration of a standard preparation of the antibiotic and anti fungal having a known activity. The antimicrobial activity was carried out by cup-plate method. The method depends on the diffusion of the drug from a cavity through the solidified agar layer of petri dish to an extent, such that growth of the added micro organisms so prevented entirely in a circular area or zone around the cavity containing a solution of the drug. The rate and degree of diffusion may be affected by concentration and type of salts, viscosity of solution, solubility, temperature etc. It is improper to compare the therapeutic value of anti microbial agents on the basis of size of the zone of inhibition as some excellent therapeutic agents diffuse poorly in agar and vice versa.

Table No. 1: Shows zones of inhibition of Shukti Marit Haratala Bhasma, Panchatikta Churna, Shukti Marit Haratala Bhasma with Panchatikta Churna at different concentration in comparison with standard drugs.

Drug	Concentration of drug mg/ml	Zone of inhibition in mm on test organism			
		Bacterial organism		Fungal organism	
		S.A.	P.A.	C.A.	A.N.
SHB	50	0	0	0	0
	150	0	0	0	0
	200	0	0	0	21
	250	0	0	0	22
PTC	100	0	0	0	0
	200	0	0	0	0
	500	0	0	0	0
	1000	0	0	0	0
PTC+ SHB	50 mg	0	0	0	12
	150mg	0	0	0	12
	200mg	0	0	0	14
	250mg	0	0	0	22
Ciprofloxacin	1mg	40	41	-	-
Fluconazole	1mg	-	-	30	30

DISCUSSION

Antimicrobial effect of shukti marit haratala bhasma first prepared four concentration 50 mg/ml, 150 mg/ml 200 mg/ml, 250 mg/ml. on staphylococcus aureus, pseudomonas aeruginosa, candida albicans, aspergillus niger. In 250 mg/ml concentration of shukti marit haratala bhasma 22mm of zone inhibition result shown on fungal organism aspergillus niger. In 200 mg/ml concentration of shukti marit haratala bhasma 21 mm of zone of inhibition results shown on fungal organism aspergillus niger. No any antibacterial effect was observed on staphylococcus aureus, pseudomonas aeruginosa, and antifungal effect on candida albicans.of shukti marit haratala bhasma of different concentrations.

Panchatikta churna was also prepared in four different concentration 100 mg/ml, 200 mg/ml, 500 mg/ml, 1000 mg/ml for antimicrobial activity. No any antimicrobial activity of panchatikta churna was observed on staphylococcus aureus, pseudomonas aeruginosa, candida albicans and aspergillus niger.

Shukti marit hartal bhasma with panchatikta churna was prepared in 50 mg/ml, 150 mg/ml 200 mg/ml, 250 mg/ml concentrations for antimicrobial activity. 50 mg /ml and 150 mg/ml concentrations of shukti marit haratala bhasma with panchatikta churna have shown 12 mm of zone of inhibition on aspergillus niger, It indicates mild activity against fungi Aspergillus Niger. 200 mg /ml concentration of shukti marit haratala bhasma with panchatikta churna shown antifungal effect on aspergillus niger with 14 mm zone of inhibition. 250 mg/ml concentration of shukti marit haratala bhasma with panchatikta churna shown antifungal effect on aspergillus niger with 22 mm zone of inhibition.No any antibacterial effect of shukti marit haratala bhasma with panchatikta chruna was observed on staphylococcus aureus, pseudomonas aeruginosa, and antifungal effect on candida albicans.

CONCLUSION

In this study entitled “Evaluation of antimicrobial activity of shukti marit haratala bhasma with panchatikta churna” an effort was made to find out antimicrobial activity. Antifungal effect was observed only on Aspergillus niger and has not shown in other organisms.

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