ANTIBACTERIAL ACTIVITIES OF AFRICAN BLACK SOAP PREPARED FROM PALM KERNEL OIL.

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ABSTRACT

The efficiency of African black soap commonly used for the treatment of infection associated with Staphyloccus Aureus and Escherichia Coli were studied.The soap was extracted using water and the antibacterial activities of extracts were investigated using chemical isolation of the organism. The Agar well diffusion method was employed for sensivity test of the organism. The zone of inhibition for the test organism staphylococcus Aureus obtained against concentration of 0.05g/ml, 0.10g/ml, 0.15g/ml and 0.20g/ml are 0.7mm, 0.8mm, 0.8mm and 0.9mm. and for Escherichia Coli are 0.3mm, 0.2mm, 0.4mm and 0.6mm respectively. From the results obtained due to increase in concentration of the samples, it leads to an increase in zone of inhibition of the test organism, Therefore, the results show that the soap has anbtibacterial activity on the test organism.

Keywords: African black soap, Agar well diffusion method, Zone of Inhibition, Staphylococcus Aureus, Escherichia Coli.

INTRODUCTION

Palm kernel oil is an edible plant oil derived from the kernel of the oil palm Elaeis guineensis (Poku, 2012). Palm kernel oil is high in lauric acid which has been shown to raise blood cholesterol levels, both as cholesterol contained in low density lipoprotein and cholesterol contained in high density lipoprotein (Rakel, 2012). Lauric acid is important in soap making: a good soap must contain at least 15% laurate for quick lathering, while soap made for use in sea water is based on virtually 100% laurate (Musa, 2009). Soap are mainly used as surfactants for washing, bathing and cleaning, but they are also used in textile spinning and are important components of lubricants. Soap for cleansing are obtained by treating vegetable oil or animal oils and fats with a strong alkaline solution. Fats and oils are composed of triglycerides; three molecules of fatty acids are attached to a single molecule of glycerol (Beetseh and Anza, 2013). African black soap widely used by different tribes in Nigeria has different names, such as Ose Dudu in Yoruba and Eko Zhiko in Nupe (Getradeghana, 2000). In western part of Africa, black soap is known as Anago soap or Alata simena in Ghana and in Hausa it is khown as Sabulun salo. The making of soaps from ash-derived alkali has been an age-old craft in Nigeria and West Africa countries (Bella, 2008). African black soap or black soap is a natural source of vitamin A and E, and Iron (Grieve, 1997). Depending on where it is manufactured, black soap contains leaves and plantain skins, shea tree bark, cocoa pods or palm tree leaves (Bella, 2008).

African Black soap has numerous benefits and importance, Black soap enjoys a reputation forimproving or eliminating uneven skin tone, razor bumps caused by ingrown hairs and skin rashes. It is not scented and can be used by anyone who wishes to improve the quality of his/her

skin. It is excellent for clearing up oily skin, acne price for it's antiseptics properties. African people also use black soap to prevent the skin from rashes, ring worm, measles and eczema and body odour. It is used as a natural shampoo to avoid dry itchy scalp. Black soap is used in the treatment of many infectious disease caused by micro-organisms. Black soap is highly thought of; it is used in African for spiritual purification. (Karen, 2004 and Jones, 2001).

SCOPE

The scope of this research works is to determine the antibacterial activities of black soap on *Staphylococus aureus and Escherichia coli.*

METHODOLOGY

SAMPLE COLLECTION

The sample of Black soap was prepared in the laboratory. Ten mililiter (10ml) of distilled water was pipette into four different test tubes. African black soap was weighed and put into 10ml of distilled water in each test tube i.e. 0.05g of African black soap was put into the first test tube. 0.10g, 0.15g and 0.20g of the soap was also put in the 2nd, 3rd and 4th test tube to obtain various concentration of 0.05g/ml, 0.10g/ml, 0.15g/ml and 0.20g/ml respectively. The test tubes were shaken for the soap to disolve.

MEDIA PREPARATION

The preparation of media was done using the manufacturer's instruction. The nutrient Agar is a general purpose medium which support the growth of most micro-organism. The disolved media was autoclaved at 121^0C for 15 minutes. The plates for culturing were sterilized in hot air oven at 160^0C for 60 minutes. They were then cooled at room temperature before pouring the media into the sterile petric dishes and allowed to gel before used.

ISOLATION OF BACTERIA

Pure culture of *Staphylococcus aureus and Escherichia coli* were obtained in General Hospital Bayara. A portion of the pure of test organism was picked and streaked on the surface of the media. The plates were incubated at 37^0C for 24 hours

ANTIBIOTICS SENSITIVITY TEST OF THE ORGANISMS

The Agar well diffusion method was employed for the sensitivity test of organisms. A two day old growth culture of the preserves test organism was uniformly spread on the surface of the solidified medium in the petric dish with aid of sterile cork borer also about 12-15ml deep and 8.00mm in diameter was made on the surface of cultured plate. They were all label then drops of each extract was dropped in the hole about 0.05g/mol, 0.10g/mol, 0.15g/mol and 0.20g/mol using sterile springe, plates were then incubated at 37^0C for 25hours after which zone of growth inhibition were checked Duguid, (2016).

GRAM STAINING

The smear of the specimen were made on clean grease free slides and then fixed by passing flame three times on the slides, the fixed smear was then covered with crystal violet or methyl violet for 1 to 2 minutes, the stain was replaced by the lugholes iodine for 3 seconds to 1 minute without washing. The slide was then washed with acetone or alcohol for a few seconds until there is no more colour coming out of the smear. The smear was washed again with water.

Then the smear was covered with neutral red or seatrains for two minutes. It was then wash with water and air dry for further observation. (Monica, 2009).

RESULT

The results of this research work are presented in the tables below

Table 1 : The Effect of Using Different Concentrations of African Black Soap against *Staphylococcus aureus* and *Escherichia coli.*

Concentrations	0.05g/ml	0.10g/ml	0.15g/ml	0.20g/ml
S aureus	0.7mm	0.8mm	0.8mm	0.9mm
E coli	0.3mm	0.2mm	0.4mm	0.6mm

Keys

S aureus = Staphylococcus aureus

E coli = Escherichia coli

Table 2 : Gran Staining Effect on Micro-organism.

Micro-organism	Shape	Gram Reaction
S. aureus	C	+
E. coli	C	-

Keys

C = cocci

+ = positive

- = negative

DISCUSSION

The research conducted reveals the effects of African Black soap on *Staphylococcus aureus* and Escherichia coli. The soap was found to have antibacterial properties against the test organisms. The zones of inhibition for test organisms *Staphylococcus aureus* Obtained against concentrations of 0.05g/ml, 0.10g/ml, 0.15g/ml, and 0.20g/ml are 0.7mm, 0.8mm, 0.8mm and 0.9mm. And for the *Escherichia coli* obtained are 0.3mm, 0.2mm, 0.4mm and 0.6mm respectively. The highest zone of inhibition was found in the largest concentration which is 0.9mm in 0.20g/ml while the lowest zone of inhibition is found in the least concentration which is 0.7mm in 0.05g/ml for *Staphylococcus aureus* and for *Escherichia coli* the highest zone of inhibition was found in 0.20g/ml concentration which is 0.6mm while the lowest zone inhibition is found in 0.10g/ml concentration which is 0.2mm.

CONCLUSION

It was concluded from the result obtained due to increase in concentration of the sample lead to an increase in the zone of inhibition of the test organisms. Therefore, it shows that African Black soap has antibacterial activity on the test organisms.

RECOMMENDATION

The response of the test organisms, *Staphylococcus aureus* and *Escherichia coli* has provided a clue that African Black soap has antibacterial activities. This therefore, justified the use of African Black soap for other antibacterial purposes. Further studies should be made on antifungal and antimicrobial.

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