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**ANTIFUNGAL EFFECT OF TOPICALLY ADMINISTERED NEEM
(*Azadirachta indica*) SEED OIL CREAM AGAINST
PYTIRIASIS VERSICOLOUR**

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ABSTRACT

The study was carried out to evaluate the antifungal effect of Neem seed oil cream against *Pytirisias versicolour* infection of the skin. Fifteen samples of 20 g each i.e. three samples each of concentrations, 2.5% w/w, 5.0% w/w, 7.5% w/w and 10.0% w/w neem seed oil cream and a commercial preparation (Whitfield Ointment) were given out to patients randomly. Double blind approach was adopted in prescribing the samples to the patients diagnosed to have *Pityriasis versicolour* fungal infection of the skin; double blind in the sense that both clinician and patients were blinded as to the identity of the samples. The clinical responses to neem seed oil cream concentrations 2.5% w/w and 5.0 w/w were not encouraging. However, at concentrations 7.5% w/w and 10.0% w/w, neem seed oil cream showed excellent improvement in clinical conditions of the patients infected with *Pityriasis versicolour* on their skins. They compared favourably with the commercial control sample.

Keywords: neem seed oil, *Pytirisias versicolour*, cream, topical

INTRODUCTION

Azadirachta indica A. Juss, synonymous with *Melia azadirachta* and *Melia indica* (A. Juss) belongs to the family meliaceae. This plant is indigenous to the Indo-Pakistan subcontinent (1), although it is now widely distributed in many countries of the World. It is believed that Indians migrating to African countries introduced it into that continent.

In a recent review, Aremu *et al* (2) cited reported indications of Neem seed oil in the literature such as repellent action against *Aedes aegypti* mosquitoes

(3), anticandidal activity (4) and antipyretic effect (5). As an extension of previous works, Aremu *et al* (6) investigated the safety of topical administration of neem seed oil cream using both male and female albino rats. They found in their study that neem seed oil cream caused no remote damage to the essential organs studied such as kidney and liver within the short period of their investigations. Although there was a form of dermal irritation, which

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may likely resolve after long cessation of treatment.

Attempts have been made to design the delivery mechanisms for neem seed oil in view of its medicinal relevance. Vanishing cream base has been used to prepare dermatological dosage form of neem seed oil and its physico-chemical properties evaluated to ensure stability during storage (7). In the present study, neem seed oil cream is being evaluated clinically against *Pityriasis versicolour*. *Pityriasis versicolour* is a common skin complaint in which flaky discoloured patches appear mainly on the chest and back (8). The term 'Pityriasis' is used to describe skin conditions in which the scale appears similar to bran. The multiple colours arising in the disorder give rise to the second part of the name, 'Versicolour'. It is sometimes called 'Tinea versicolour', although the term 'tinea' should strictly refer to infection with a dermatophyte fungus (9). *Pityriasis versicolour* affects the trunk, neck, and/or arms, and is uncommon on other parts of the body. The patches may be pink, coppery brown or paler than surrounding skin. They may be mildly itchy. Pale patches may be more common in darker skin; this appearance is known as *Pityriasis versicolour alba* and is less likely to itch (10). Sometimes the patches start scaly and brown, and then resolve through a non-scaly and white stage. The recurrence of this infection after treatment with common antifungal agents necessitates the search for an alternative antifungal agent that can give patients reliable hope.

MATERIALS AND METHODS

Plant species: - Ripe seeds of neem plant were collected from Osogbo, a town in South Western part of Nigeria. The plant specie from which the seeds were collected was authenticated at Forest Research Institute of Nigeria (FRIN) with FHI No 107818.

The seed kernels were sun dried until the moisture content was reduced to about 10% w/w. The seed kernels were later stored in air tight containers.

Extraction of the oil

The dried seed kernels were comminuted using blender model MX - 738 (Nakai, Japan). The blended materials were stored in air tight containers. Using the method of Charmaine *et al* (4), normal hexane was used as solvent for extraction at seed weight: solvent ratio 1:10. The seeds were allowed to macerate in the solvent for 8 days at room temperature. The solvent was then filtered through a Whatman filter paper (No 1) to remove the coarse seed materials, into pre-weighed sterile containers. The containers were covered with filter paper and solvent was allowed to evaporate. The weight of the residue was calculated and the extracts were kept at room temperature.

Preparation of the cream

Different concentrations of neem seed oil i.e 0% w/w, 2.5% w/w, 5.0% w/w, 7.5% w/w and 10.0% w/w respectively, were incorporated into vanishing cream base using fusion method.

Clinical trials on human volunteers

Application and proposal for clinical evaluation of the neem seed oil cream were presented before the Ethical Review Committee of Olabisi Onabanjo University Teaching Hospital, Sagamu. After the appearance and defense of the proposal, approval was given. Fifteen samples of 20 g each i.e. three samples each of concentrations, 2.5% w/w, 5.0% w/w, 7.5% w/w and 10.0% w/w neem seed oil cream and a commercial preparation (Whitfield Ointment) were given out to patients randomly. Double

RESULTS

A total of fifteen patients volunteered to participate in the clinical trials. The clinical responses to neem seed oil cream concentrations 2.5% w/w and 5.0 w/w were not encouraging. At concentrations 7.5% w/w and 10.0% w/w however, neem seed oil cream showed excellent improvement in clinical conditions of the patients infected with *Pityriasis versicolour* on their skins. They compared favourably well with commercial control sample as can be seen in Table 1.

Table 1: The analysis of results of the patients that participated in clinical

Samples	No. of patients	No. of Patients lost to Follow-up	Response		
			Poor	Good	Excellent
2.5% w/w	3	1	2	-	-
5.0% w/w	3	2	1	-	-
7.5% w/w	3	NIL	-	-	3
10.0% w/w	3	1	-	-	2
Control formulation	3	NIL	-	-	3

trials

blind approach was adopted in prescribing the samples to the patients diagnosed to have *Pityriasis versicolour* fungal infection of the skin.

The sample photographs of responses of patients that participated in clinical trial is presented in plates 1 to 10.



Plate1: Patient right arm showing *Pityriasis versicolour* infection before application of 7.5% w/w neem seed oil cream

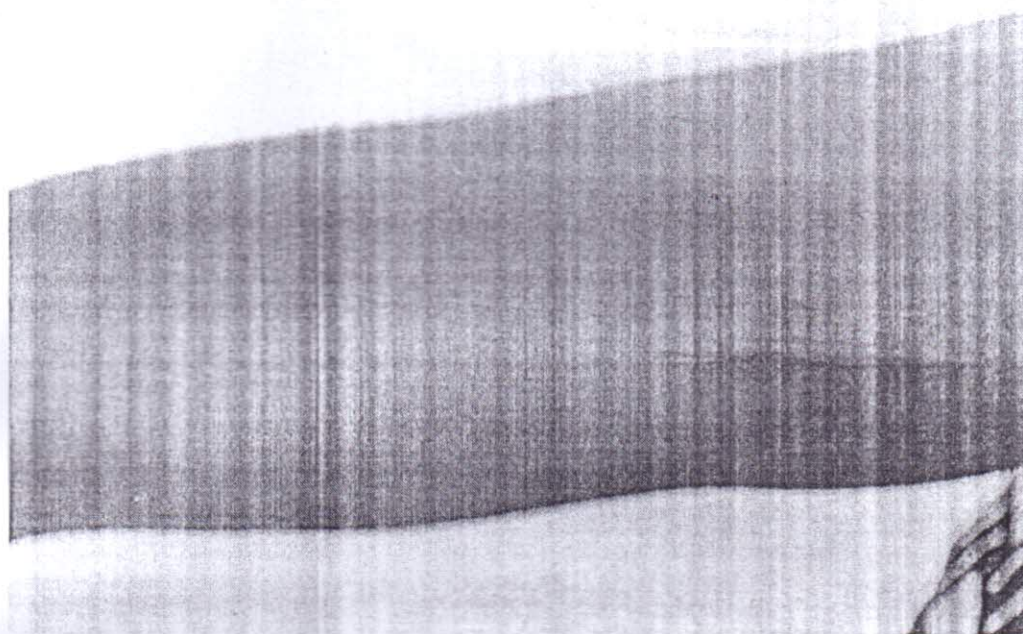


Plate 2: Patient right arm two weeks
post application of 7.5% w/w Neem
seed oil cream

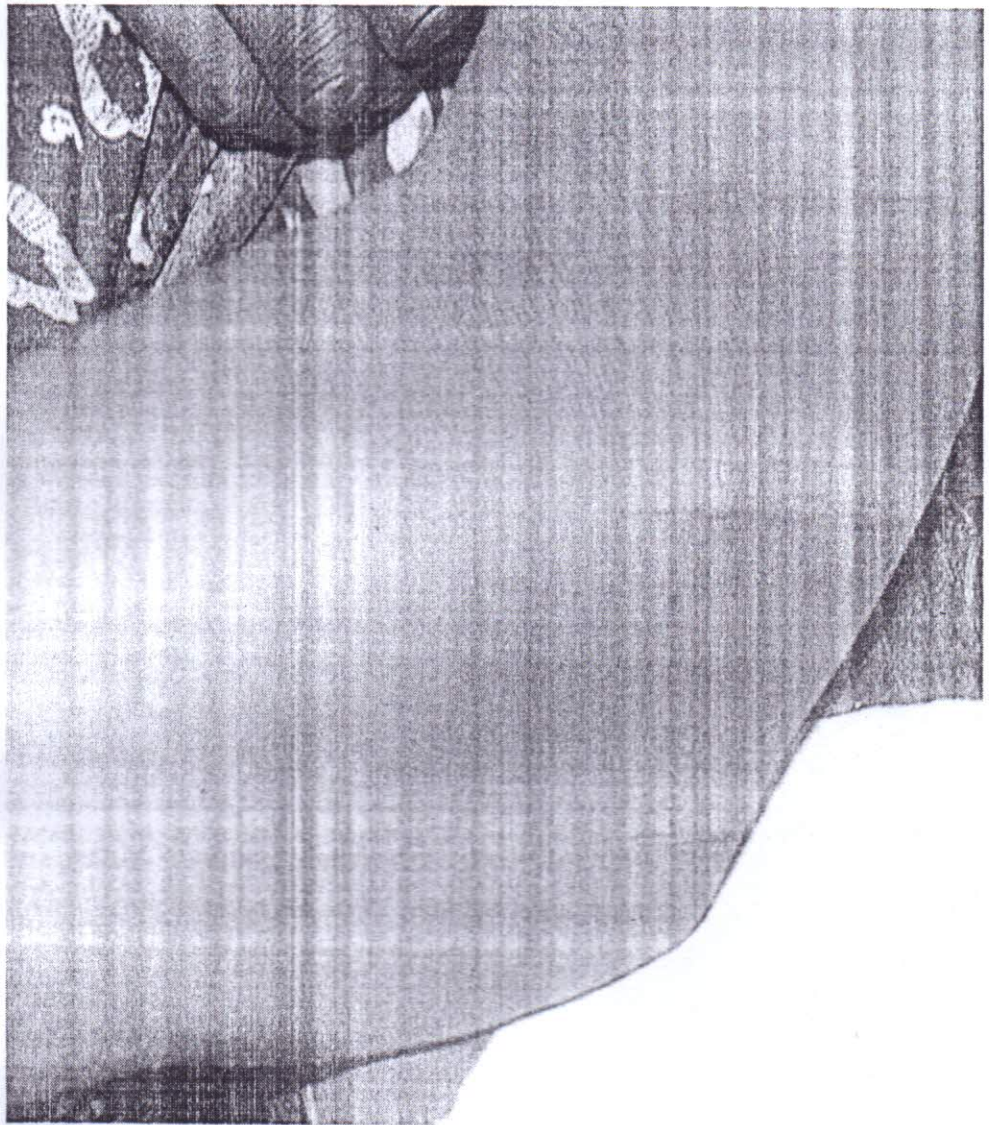


Plate 3: Patient left arm showing
Pityriasis versicolor infection before
application of 7.5% w/w neem seed oil
cream

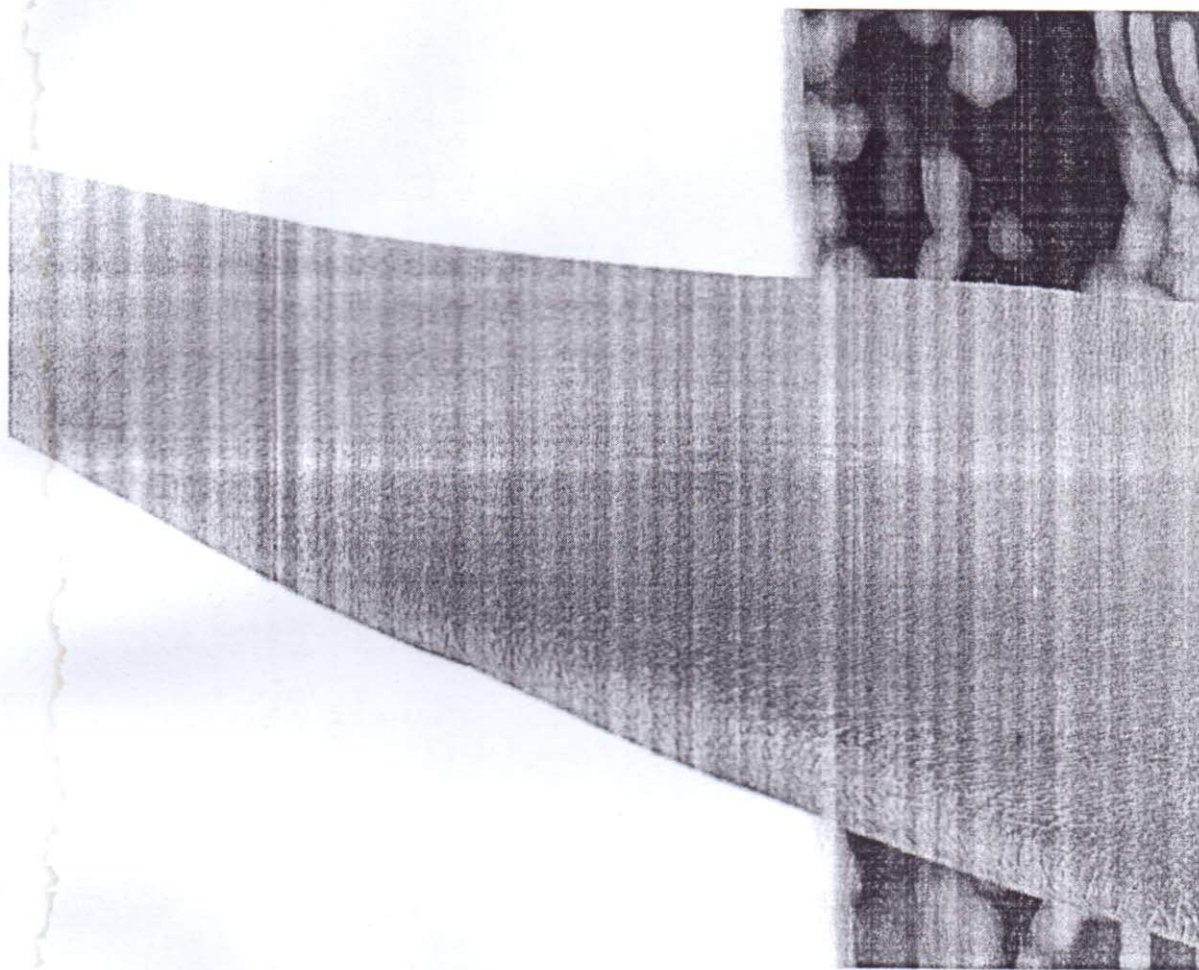


Plate 4.:Patient left arm two weeks post application of 7.5% w/w neem seed oil cream