

ANTIMICROBIAL AND NUTRACEUTICAL POTENTIALS OF A WILD MUSHROOM (*TRAMETES* SPECIES) COLLECTED FROM ARAROMI, ONDO STATE, NIGERIA

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Introduction

Mushroom is defined as “a macro fungus with a distinctive fruiting body which can be hypogeous or epigeous, large enough to be seen with the naked eye and to be picked by hand [1]. Mushrooms have continued to generate a lot of interest particularly in its consumption as food, in cure of diseases, in biodegradation and as important items of commerce in Nigeria and all over the world [2]. *Trametes* species are leathery and the fruit bodies typical grow in a fan-like form on the trunks of living or dead trees and on soil.

Objective

This study was conducted to evaluate the pharmacological potentials of *Trametes* species (Pers) Mushroom collected from Araromi, Ondo State, Nigeria.

Materials & Methods

Collection of Mushroom

Trametes species (L) were collected in the wild between July and September, 2010 in Araromi, Ondo State, Nigeria. The dried mushroom was then grinded to fine powder using clean pestle and mortar, and the powder was stored in an air tight glass jar until required for use.

Phytochemical Screening

The presence of the following Phytochemicals: alkaloids, saponins, cardiac glycosides, steroids, tannins, flavonoid, terpenoid, antraquinone and phlobatannins were assessed on ethanol, ethyl acetate and n-hexane extracts according to standard methods [3].

Scavenging effect of extracts on DPPH radicals

The method of Oyetayo [4] was used to determine the effect of extracts of *Trametes* species obtained from Araromi on DPPH radicals with some modifications.

Antimicrobial activity

Four clinical bacterial isolates were tested to determine the antibacterial activity of the ethanol, ethyl acetate and n-hexane extract, using agar well diffusion method.

Statistical analysis

Data obtained were analyzed by one way analysis of variance and means were compared by Duncan's multiple range tests (SPSS 11.5 version).

Results



Plate 1: Photograph of fruiting body of *Trametes* species (front view)

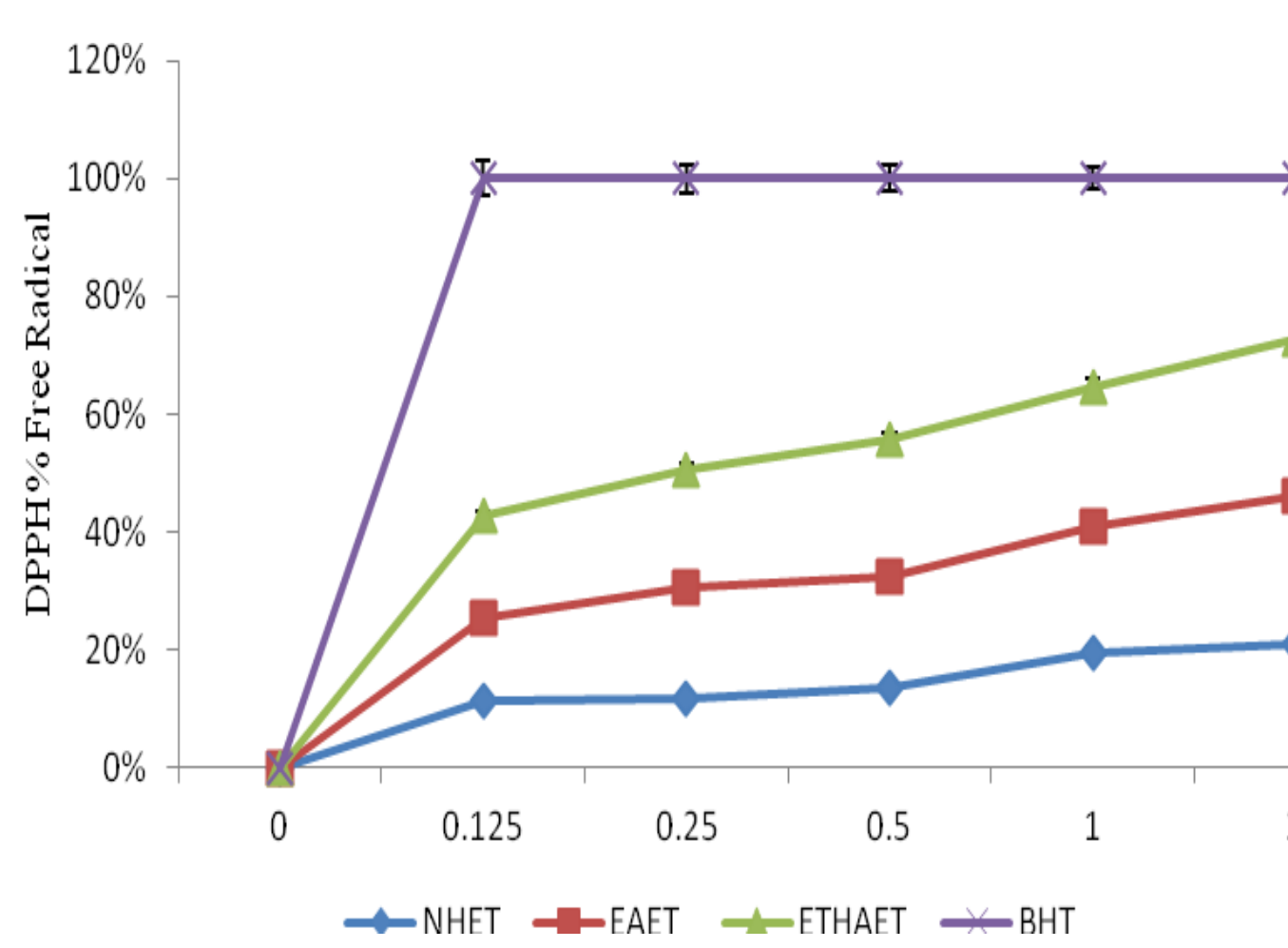


Figure 1: Scavenging activity of ethanol, ethyl acetate and n-hexane extracts on DPPH radicals. Each value is mean \pm standard deviation (n=3)
Key: NHET = n-hexane extract of *Trametes* species, EAET= ethanol extract of *Trametes* species, ETHAET= ethyl acetate extract of *Trametes* species

Table 1: Qualitative analysis of the various phyto-chemicals on the ethyl acetate, ethanol and n-hexane extracts of *Trametes* species from Ondo.

Phytochemical	Ethanol	Ethyl acetate	n-hexane
Alkaloid	-	-	-
Saponin	+	+	+
Tannin	+	+	+
Flavonoid	+	+	+
Steroid	+	+	+
Terpenoid	+	+	+
Phlobatannin	-	-	-
Antraquinone	-	-	-
Cardiac glycosides	+	+	+

Key: + = Positive; - = Negative

Table 2: Antimicrobial activity

Microorganism	Ethanol	Ethyl acetate	n-hexane	Control (CL)	Control 4%DMSO
<i>Bacillus cereus</i>	28 \pm 0.00	17 \pm 0.00	9 \pm 0.16	30 \pm 0.20	-
<i>Staphylococcus aureus</i>	26 \pm 0.18	14 \pm 0.00	6 \pm 0.00	28 \pm 0.11	-
<i>Pseudomonas aureginosa</i>	22 \pm 0.00	12 \pm 1.08	4 \pm 0.11	27 \pm 0.06	-
<i>Escherichia coli</i>	20 \pm 0.33	10 \pm 0.90	2 \pm 0.15	26 \pm 1.00	-

Each value is expressed as mean \pm standard deviation
KEY: CL- Chloramphenicol.

Discussion

The investigation on phytochemical constituents of ethanolic extract of *Trametes* species are in correlation with the previous work on mushrooms by Hammond [5]; Kadiri and Fasidi [6]. Extracts showed good antimicrobial activity against all the bacteria. Ethanolic extracts exhibited a better (antioxidant property) DPPH scavenging effect of 85.88% at 2mg/mL than other extracts. In a previous report, the highest scavenging activities on DPPH radical obtained for edible mushroom such as *Lentinus edodes* (Berk.) Singer was 55.4% and *Volvariella volvacea* (Bull.) Singer 37.9% at the concentrations of 1-9 mg/mL [7].

Conclusions

The demonstration of activity against different category of clinical bacterial isolates as well as the antioxidant potentiality by ethanolic extract of *Trametes* species proved its scientific justification of the local application as a health remedy.

References

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