Ethnobotanical Uses, Safety and Efficacy of Potential Aphrodisiac Herbs Found in Katsina State, Nigeria.

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Introduction

This study examines and documents plant species with aphrodisiac potentials and their cultural use in Katsina state, Nigeria, with the aim of according scientific validation to a select five after subjecting them to quality, safety and efficacy tests. This study is important for medicinal plants research, natural resources management, drug development and World Health Organization's Traditional Medicine ™ strategy.

Research objectives:

a) To document plant species used as aphrodisiacs in the study area

b) To determine the classes of phytochemicals contained in the five selected species

c) To determine the acute toxicity (safety) of the five selected species

d) To establish the efficacy of each of the selected species in comparison to each other and sildenafil citrate (viagra).

Methodology

Introduction

The research design strategically combined (a) ethnobotanical survey and (b) *in vitro* experiments. The study area, Katsina state, Nigeria, has an area of 24,192 km^2 and population of 5,801,584 and a total of 34 Local Government Areas (LGAs). Stratified random sampling was used to select 186 respondents from nine randomly selected LGA's. They were administered semi-structured questionnaires (SSQ's) for the collection of Traditional Medicine – Indigenous Knowledge (TM –IK) and their socio-demographic information. They were limited to serving as (a) sources of TM – IK and (b) guides for the field-work and plant collection. Key Informants' Interview (KII) guides were also administered to ten key informants to augment information collection.

Qualitative phytochemical analysis was carried out to find out what major phytochemical compounds they contained. Acute toxicity and efficacy test were run concurrently on a 30-albino rat model (in six groups of five, including control) Doses in mg/kg body weight (in six levels) were administered in two phases based on the method of Lorke (Arome and Chinedu, 2013) The negative control group (placebo) was given rat feed and water only. Sexual function indices for libido i.e. Mount Frequency (MF) and Mount Latency (ML) were calculated to determine the efficacy of the herbs.

TM-IK obtained was analysed or assessed by ethnobotanical importance tools, viz; (1) Factor of informants' consensus (Fic) which measured respondents' consensus on Sexual Dysfunctions (SDs) prevalent among the community, (2) Fidelity Level (FL) which measured the relative healing potential of the herbs

and (3) Relative Frequency of Citation (RFC) which determined the relative importance of each herb.

Descriptive and inferential analyses were used in SPSS (20.0) to determine statistical significance between efficacies.

Key Study findings

Apart from respondents' socio-demography, the survey generated an inventory of 59 potential aphrodisiac herbs and documented their domestication status, classification, parts used, modes of preparation, routes of administration (of the medication) as well as Sexual Dysfunctions (SDs) treated by them. TM-IK obtained from the survey, show high-level cultural use of 59 locally-known potential aphrodisiac herbs (belonging to 59 species, 58 genera and 32 families). Mean Fidelity Level, FL (59%) and Mean Relative Frequency of Citation, RFC (61%) were recorded. The roots of trees were the most used parts (40%) for preparing mainly decoctions (60%) that were taken orally (97%).

Similar TM-IK obtained from respondents revealed six types of Sexual Dysfunctions (SDs) among the people (evidenced by high F_{ic} values).

Qualitative Phytochemical analysis of the five herbs showed the presence of alkaloids, flavonoids, steroids, steroid glycosides and anthraquinones, in moderate to adequate amounts.

Zero lethality result obtained from the toxicity test shows that the herbs are practically non-toxic to the rats. However, long term effects may still differ and require further investigation.

This study has shown that all the five selected herbs have statistically significant levels of efficacy (aphrodisiac action or sexual function) when compared with placebo. However, the herbs H_1 (*Andropogongayanus*) and H_3 (*Combretumcollinum*) had out-performed other treatment options including sildenafil citrate. All five herbs have therefore been accorded preliminary scientific validation and can qualify for scrutiny in further research and crude drug development

Recommendations:

1. Ethnobotanical studies should incorporate *in vitro* experiments (for quality, safety and efficacy determinations) into ethnobotanical surveys.
2. Studies on acute toxicity and efficacy of crude herbal drugs should be run concurrently on a single animal model for more accuracy and economy of resources (parsimony).
3. Further research on the five herbs should extend the phytochemical analysis beyond qualitative determination in order to trace at a molecular level what factors are specifically responsible for the observed aphrodisiac potentials of the crude herbal aphrodisiac drugs.
4. There is a need to investigate the phenomenon of the synergy of phytochemicals in crude herbal aphrodisiac drugs

and how it may affect aphrodisiac action.

Key References

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