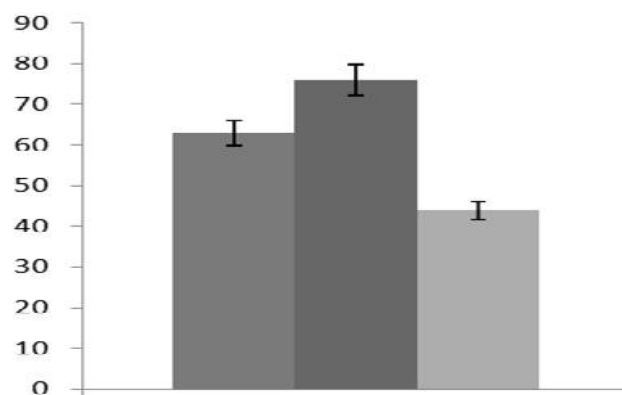


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RESEARCH ARTICLE

EFFECT OF HERRBAL TEA "GADAGI MAGANI TEA " ON ACUTE SERA UREA AND CREATININE ALTERATION

Umar A.A^{1*}, Munir G², Sunday E³, Asibu A.M⁴ and Salihu I⁵

^{1, 2, 3}Department of Biological Sciences, Fedral University Dutse, Jigawa-Nigeria

^{4, 5}Department of Biochemistry Bayero University Kano-Nigeria

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ABSTRACT

The goals of this research it to quantify and assess the effect of Gadagi Magani tea in the human physiology. Fifty (50) people were subjected to this research and were group into three; Magani only consuming group A (20 people), mixture of Magani and energy drink group B (20) and 10 non-gadagi consuming group C (control). Both serum Creatinine and Urea were determined using photospectrophotometry method finding of this study shows that, the creatinine level was higher statistically significant ($p < 0.05$) in group B than group A and C, whereas group A has creatinine level significantly higher ($p < 0.05$) than control, group C. In comparison, the serum level of urea was statistically lower in group A and B than control group C. Group B which in turn having lowest serum urea level. Totally, Gadagi Magani tea should be banned as it affects the sera levels of creatinine and urea.

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INTRODUCTION

Gadagi is a concoction of different herbs, roots, shrubs and leaves prepared locally inform of tea drink by many hard labourers, tailors and youths to get ability to tide over adverse and enhance their endurance for strenuous activities in order to achieve a said goal in short period of time, ^[5]. Gadagi tea is divided into three main types Magani (alternatively Herbal), Sak and Sada, ^[6]. Although, many other types have emerged such as Baki (literally Black), Kyankyaso (cockroach) amongst others. It has been reported that, higher rate of consumption was progressively increasing in Kano and some few states in northern Nigeria, ^[6] as well as some parts of Niger republic.

Magani also called herbal composed of *Alysicarpus vaginalis*, *Eucalyptos Canadulensis*, *Mangifera indica*, *Psidium guajava*, *Musa sapientum*, *Khaya senegalensis*, *Fagara zanthoxyloides*, *Thonningi sanguine*, *Allium sativum*, sugar and water at no specific dose boiled at temperature above 115°C for more than 8 hours. Atiku et al., reported that, users were adding some drugs, kunkubima, passion, power fist (energy drink) and marijuana (*Cannabis sativa*) to enrich the Magani type of Gadagi, ^[1].

Creatinine is a byproduct of muscle metabolism chiefly removes from the blood by kidneys, ^[12]. It is non-toxic catabolic product of creatine phosphate filtered out in the blood

by kidney devoid of any reabsorption, ^[13]. Rise in serum creatinine level is marker for renal dysfunction, ^[10].

Urea is a foremost disposal form amino group derived from amino acids, and accounts for about 90% of nitrogen-containing compound in urine, ^[3]. High serum urea is associated with renal failure, congestive heart failure and gastrointestinal hemorrhage, ^[9]. However, the main causes of low serum urea level are coupled with liver diseases, anabolic state and syndrome of inappropriate anti-diuretic hormone, ^[9]. Hence, this study was conducted to quantify and assess the effect Gadagi Magani tea users among the indigenes of Kano state.

MATERIALS AND METHOD

Ethical considerations

The study was approved by Kano state ministry of health, followed by the Local Health Authority. The study was explained to each participant. Individuals consent were asked to participate in the study; only those who provided consent were registered and requested to fill questionnaire and provide samples. To document verbal consent, the name of each individual who provided verbal consent was recorded, along with the test results for their samples and kept confidentially.

*Corresponding author: Umar A.A

Department of Biological Sciences, Fedral University Dutse, Jigawa-Nigeria

MATERIALS

Creatinine testing kit (Fluka), Urea kit (Fluka), spectrophotometer, Centrifuging machine (Model 800D) and Micro pipette (Pyrex glass),

Experimental Design

This study is conducted in two areas of Kano State. Fifty matured male subjects were recruited during March 2015. The study obtained two data for all individuals participated in the research.

Primary source of data

A semi-structured questionnaire was prepared and shared among the consumers at Kofar Ruwa Market and Motor Park of Kano State. The age, height, weight, sex, location, mixture of Magani and Energy drink consumers, and only Magani consumers and reason for consumption were all captured.

Secondary source of data

This involved wet lab practical. Using the information obtained from questionnaire, the consumers are grouped into Magani only consuming group (group A) and Mixture of Magani and energy drink consuming group (group B) where group C serves as control group. 50 matured peoples all males, were recruited in this research 20 each for group A and B while 10 non-Gadagi consuming people for group C

METHODOLOGY

3 ml of venous blood sample was collected from each group member and transferred into labeled EDTA container. The blood was spun for 10 minutes at 1,500G and the serum was separated from blood corpuscles using pouch and poured into fresh labeled corresponding container.

Serum Creatinine Determination using Jaffe’s principle, [7]

Test-tubes were labeled as Test, Standard (STD) and Blank. 50ul of working reagent was added to the labeled test-tubes. 50ul of serum, standard and nil was added to test, standard and blank respectively. Blank was used to zero the spectrophotometer at 520nm wavelength. First absorbance A_1 was read immediately 30 second after while the second reading A_2 follows at exactly 2 minutes after A_1 . The difference of which was determined to calculate the concentration of creatinine.

The result is shown in the table 2 below

Serum Urea Determination using Berthelot’s principle, [2].

Test-tubes were labeled as test, standard and blank. 0.1ml of sodium nitroprusside and urease were added to the labeled test-tubes. 0.1ml of serum, standard and distilled water were added to test, standard and blank respectively. The test-tubes were incubated at 37°C for 10 minutes. Spectrophotometer was

blanked at 560nm wavelength using blank. The concentration of urea was calculated using the formula below;

$$[\text{Urea}] = \frac{A_{\text{test}}}{A_{\text{std}}} \times [\text{STD}] \text{ (mmol/l)}$$

Ethical considerations

The study was approved by Kano state ministry of health, followed by the Local Health Authority. The study was explained to each participant. Individuals were asked to consent verbally to participate in the study; only those who provided consent were registered and requested to fill questionnaire and provide samples. To document verbal consent, the name of each individual who provided verbal consent was recorded, along with the test results for their samples and kept confidentially.

Statistical analysis

Raw data obtained from the questionnaires and hematology was analyzed. Analysis of variance (ANOVA) and student T-test were applied to test the effect of Magani consumption on the level of sera urea and creatinine.

The results of which are shown in the table 2 below

RESULTS

Table 1 Data Obtained from Questionnaire

Group	Volume (Gadagi)	Perspiration/ diaphoresis	Urination	Fatigue to night	Sleeping Stimulant drug
A	50cl	high	7-8 times	Around 9-10 pm	Not necessary
B	50cl	Highest and instant normal	Polyuria	Late in the night	Necessary
C	nil		normal	Normal	Not at all

Table 2 Mean Serum Level of Creatinine, and Urea

S/N	Group	Serum Creatinine (μmol^{-1})	Serum Urea (mmol^{-1})
1	A	63±17.4	2.8±4.55
2	B	76±13.1	1.9±2.92
3	C	44±11.7	5.3±2.14

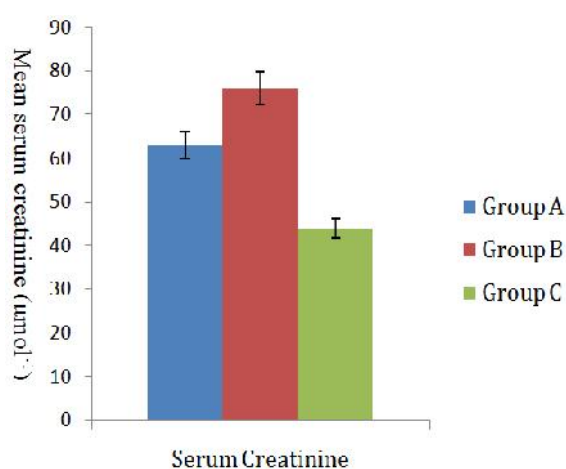


Figure 1 Comparative mean serum creatinine

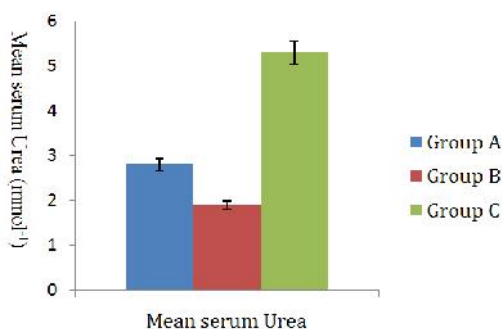


Figure 2 Comparative mean serum urea among Magani consumers

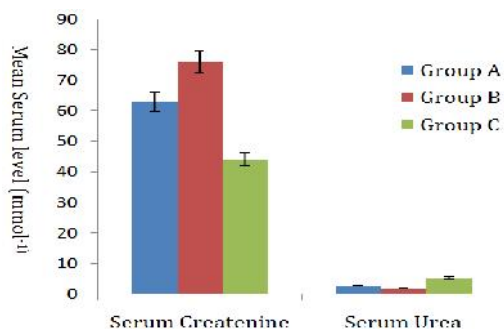


Figure 3 Generalized Comparative Graph for Sera Creatinine and Urea

DISCUSSION

From table 2 above, the mean serum level of creatinine in group B (Magani mixed with energy drink) is statistically higher ($p < 0.05$) when compared with group A and C, whereas group A has high mean serum creatinine level statistically significant than group C (control group). It has been shown in table 1 above group B has excessive sweat and very high and frequent urine which results in dehydration. It is believed that dehydration, sweat and diuresis cause elevation of serum creatinine,^[11] According to Taylor *et al*, high serum creatinine level was an indicator of kidney impairment,^[10, 11] Strenuous activities over long period of time and intake of drugs having toxic effect on kidney could cause serum creatinine elevation,^[11] In comparison, the mean level of serum urea in group A and B was statistically lower ($p < 0.05$) than group C (control). This is because among the compositions of Magani, there should be phytochemical(s) which causes rapid urine formation and hence, the excess urea passed out through urine. Group B has statistically low serum urea level compared to its counterpart (group A). This result from the addition of caffeinated energy drink which aggravates urine production,^[4] much higher than that of group A, as shown in table 1 above.

CONCLUSION

Summary our findings shows that both Magani only and mixture of Magani and energy drink are likely to be the major risk factors for the increase serum creatinine level and lowers serum level of urea among users.

Recommendation

Total abstinence of the use of Magani type of Gadagi should be avoided at all so as to have proper kidneys functioning. However, there is need to carry out other renal tests in human so as to better conclusion.

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