ASSESSMENT OF VINO GANO GINGER AND HERB LIQUEUR ON THE BIOCHEMICAL PARAMETERS OF THE WISTAR RATS.

ABSTRACT

Biochemical parameters are biomarkers used in evaluating the functionality of some bodily organs such as liver, kidneys and the heart. This study aimed at assessing the effects of Vino Gano Ginger And Herbal Liqueur on the Biochemical Parameters of the male Wistar rats. A total of 25 adult male Wistar rats weighing between 115.3 -248.6g were used for experiment. They were divided into four groups [4 in each group] based on the body weight and different dosage of Vino Gano Ginger and Herb Liqueur were administered to the rats of various groups. Nine[9] out the 24 was used to determine the Sub- acute test to basses toxicity and mortality using Lorke (1983) method.

Group 1: Control group receive normal feed and water as placebo. Group 2: 5ml/kg of Vino Gano Ginger and Herb Liqueur was administered. Group 3: received 10ml/kg of Vino Gano Ginger and Herb Liqueur. Group 4: 15ml/kg of Vino Gano Ginger and Herb Liquor was administered orally for 4 weeks. The experimental animals were weighed weekly and at the end of the 4th week, they were sacrificed and blood samples were collected for Biochemical Analysis. Results showed significant elevation in mean AST, ALT, ALP, Urea, Creatinine, Total Cholesterol and LDH of the Wistars treated with [5ml/kg, 10ml/kg and 15ml/kg] of the Vino Gano Ginger and Herb Liqueur ($p<0.05$). A significant Total Protein reduction was recognized of the Wistar rats treated with Vino Gano Ginger and Herb Liqueur. The was slight increase in Albumin in the treatment group 1[5ml/kg] but reduction was recorded in treatment groups II and III [10ml/kg and 15ml/kg]. In conclusion, continues intake of Vino Gano Ginger

and Herb Liqueur will pose reno-toxic effect, Myocardial infarction, Cholestasis, Sarcopenia, leukemia and other life treating conditions.

Key words: Biochemical parameters, Biomarkers, Vino Gano Ginger and Herbal Liqueur.

INTRODUCTION

In a bite to satisfy women, men continually indulge in taking over dose of piles and various herbal mixtures believed to increase the duration of sex without knowig their adverse effects. Erectile dysfunction (ED) and the-drug (Sildenafil Citrate) are commonly knownn, in public as Viagra or Revatio that causes serious histopathological side effects at overdosed or misused [1]. Every medicine which is intended to work in a particular part of the body to make positive changes may affect other parts of the body unintentionally [2,3] . There are many substances which alter the human sociosexual response cycle either negatively, positively or both. Many of the drugs used therapeutically have been reported to have adverse effects on sexuality, and this must be taken into account when these drugs are used clinically. Many substances which are used for recreational purposes (or sometimes abused) also have profound effects on sexual response. Many of these substances are used in such a way that they can correct underlying sexual problems [4]. As long as humans place value on optimal sexual functioning, there will be a demand for sex-enhancing drugs. In order for the scientific and medical community to successfully meet these challenges, more effective and relevant study designs will have to be utilized in order to separate fact from fancy [4]. Drugs may have negative effects on male libido, erection, ejaculation and orgasm, as well as on fertility, and research on these effects is increasing. Libido may be decreased by drugs that block dopamine or testosterone, or that cause

dysphoria [5]. Erection may be decreased by drugs that divert blood flow from the penis, or drugs that affect spinal reflexes. Ganglion blockers may also inhibit erection. Ejaculation may be diminished by drugs that affect spinal reflexes or be inhibited by ganglion blockage. Enervation of the vas deferens and epididymis may be blocked and cause a smaller emission. Retrograde ejaculation may occur due to blockage of the internal urethral sphincter. Orgasm is usually inhibited by the drugs that inhibit ejaculation. Fertility is impaired by drugs that affect sexual performance or spermatogenesis. Major groups of drugs that may affect male sexual function include drugs of abuse, CNS depressants, antihypertensives, anticholinergics, psychotherapeutics, hormones, and cancer therapeutics, in addition to miscellaneous other agents[5]. A self-report survey that inquired about the specific sexual thoughts, feelings, and behaviors of the participant during previous instances of being under the influence of their primary drug of dependence served as the data source. The results indicate that different categories of psychoactive agents were associated with different effects on sexual behavior, and that those effects vary by gender. Development of a valid measure assessing the type and strength of these relationships may be beneficial for use by treatment programs in promoting abstinence from drug and alcohol use and preventing relapse [6]. Sex and drugs always seems like a hot topic in the media and in nearly all social circles, but the reality of the situation is that sex and drugs can pose serious, lifelong consequences to those who engage in such behaviors simultaneously. There are always inherent risks associated with drug abuse, and unfortunately there are also serious risks involved with sex. This is true of each behavior independently, and it is a significantly exacerbated truth when the two are combined [7]. The release of reactive oxygen species (ROS) and oxidative stress is associated with the development of many ailments, including cardiovascular diseases, diabetes and cancer. The causal link between oxidative stress

and cancer is well established and antioxidants are suggested as a protective mechanism against cancer development. Herbal infusions are highly popular beverages consumed daily for different reasons. Studies showed the potent antioxidant effects of plants used in the preparation of some herbal infusions. Such herbal infusions represent an important source of antioxidants and can be used as a dietary protection against cancer. However, uncontrolled consumption of herbal infusions may cause toxicity and reduced antioxidant activity [8]. The consumption of herbal infusions is very common in the Mediterranean region and globally. In a study conducted on 1260 cancer patients in Palestine, 60.9% were consuming herbs, mostly in the form of decoctions [9]. These drinks are mainly prepared from aromatic plants belonging to the following families: Lauracae, Umbelliferae, Lamiaceae, Myrtacae and Compositae [10]. There is a renewed interest in non-nutritive bioactive compounds of foods and beverages as 'lifespan nutrients' in the risk reduction of non-communicable diseases. Herbal beverages, consumed as part of a balanced diet, may improve the antioxidant status and enhance the overall health status. Herbal teas/beverages are rich sources of natural bioactive compounds such as carotenoids, phenolic acids, flavonoids, coumarins, alkaloids, polyacetylenes, saponins and terpenoids, among others [11]. A number of pitfalls can be encountered in the interpretation of common blood liver function tests. These tests can be normal in patients with chronic hepatitis or cirrhosis. The normal range for aminotransferase levels is slightly higher in males, nonwhites and obese persons. Severe alcoholic hepatitis is sometimes confused with cholecystitis or cholangitis. Overall hepatic function can be assessed by applying the values for albumin, bilirubin and prothrombin time in the modified Child-Turcotte grading system [12]. The commonly used liver function tests (LFTs) primarily assess liver injury rather than hepatic function. Indeed, these blood tests may reflect problems arising outside the liver, such as hemolysis (elevated bilirubin level) or bone disease

(elevated alkaline phosphatase [AP] level) [12]. The need for this study became necessary due to uncontrolled intake of the Vino Gano Ginger and Herbal Liqueur as sex motivator .

MATERIALS AND METHODS

MATERIALS

Wistar rats, Vino Gano Ginger and Herbal Liqueur, Syringes and needles, hand Gloves, incubator, strip micropipette, stop watch, oven, centrifuge, cotton wool, Chloroform, xylene, 40% formaldehyde, Desiccator, Methylated spirit, EDTA bottles, Normal Sample Bottles, Animal weighing balance, Water bath, and amongst others.

Sample Administration

25 adult male Wistar rats weighing between 115.3 -248.6g were used for this study. They were kept in standard environmental condition, given standard rodent food (formulated) and water ad libitum in the animal house of Bayelsa Medical University. Nine[9] out of the 25 Wistar rats were used for Sub- Acute Test [LD_{50}] using [13] method for administration of samples.
The Wistar rats were separated into four groups based on the body weight and then different concentrations of Vino Gano Ginger and Herb Liqueur was administered to the rats of various groups. Each group contain four [4] Wistar rats.

Group 1: Normal control group receive normal feed and water as placebo.

Group 2: 5ml/kg of Vino Gano Ginger and Herb Liqueur was administered.

Group 3: received 10ml/kg of Vino Gano Ginger and Herb Liqueur.

Group 4: 15ml/kg of Vino Gano Ginger and Herb Liqueur was administered orally for 4 weeks.

Sample Collection

The experimental animals were weighed weekly and at the end of the 4th week, they were sacrificed and blood samples were collected for Biochemical analysis.

Data Analysis

Data collected from this study was analyzed as Mean ± Standard Error of Mean [SEM]. Significant difference among the groups was determined as $P<0.05$; by two-way ANOVA; using Statistical Analysis Program for Social Sciences [SPSS 22.0 Version].

Fig 1: Vino Gano Ginger and Herbal Liqueur

RESULTS

The data collected from this research was analyzed and the results are presented in tables below. Table 1 is showing the body weight of the Wistar rat treated with Vino Gano Ginger and Herbal Liquor While table 2 is showing the results of the various Biochemical indices such as Albumin, Total Bilirubin, AST, ALT, ALP, Creatinine, Total Protein, Total Cholesterol, Urea, LDH.

TABLE 1: MEAN BODY WEIGHT OF WISTAR RATS

Group 1 [CONTROL]	**Group 2 [5ml/kg]**	**Group 3 [10ml/kg]**	**Group 4 [15ml/kg**
214.30±10.5	126.50±4.5	126.23±4.5	128.13±4.3

Mean±SE

TABLE 2: MEAN VALUES OF BIOCHEMICAL PARAMETERS

S/N	BIOCHEMICAL PARAMETERS	GROUP[1] CONTROL	GROUP [2] 5mg/kg	GROUP [3] 10mg/kg	GROUP [4] 15mg/kg
1	AST[u/l]	50.73 ± 2.09^{f}	68.9 ± 3.90^{g}	72.55 ± 11.55^{h}	78.3 ± 10.30^{j}
2	ALT[u/l]	31.1 ± 0.3^{q}	51.3 ± 10.3^{r}	57.15 ± 11.15^{s}	57.1 ± 19.1^{t}
3	ALP[u/l]	70.6 ± 2.0^{y}	88.7 ± 6.70^{n}	92.1 ± 6.10^{k}	88.4 ± 10.40^{l}
4	CREATININE[mg/dl]	0.62 ± 0.02^{r}	0.73 ± 0.10^{r}	0.75 ± 0.10^{r}	0.79 ± 0.1^{r}
5	UREA[mg/dl]	15.5 ± 0.3^{m}	22.5 ± 1.70^{s}	22.05 ± 2.85^{w}	24.4 ± 1.80^{t}
6	TOTAL BILURIBIN[mg/dl]	0.34 ± 0.02^{a}	0.67 ± 0.05^{a}	0.64 ± 0.12^{a}	0.68 ± 0.12^{a}
7	ALBUMIN[g/dl]	4.50 ± 0.1^{s}	4.7 ± 0.1^{s}	4.40 ± 0.4^{s}	4.2 ± 0.0^{s}
8	TOTAL PROTEIN[g/dl]	8.50 ± 0.1^{d}	7.05 ± 0.55^{e}	7.35 ± 0.55^{p}	7.5 ± 0.30^{m}
9	TOTAL	73.0 ± 3.40^{z}	92.3 ± 10.1^{v}	99.05 ± 12.25^{a}	100.95 ± 15.35^{x}

	CHOLESTEROL[mg/dl]				
10	LACTATE DEHYDROGENASE[u/l]	151.0±2.40[a]	185.30±13.3[c]	194.7±10.7[d]	193.1±15.10[b]

All values are in Mean ±SEM.

The Means with Different superscript alphabets in the same row indicates significant difference at 95% confidence level ($p<0.05$).

DISCUSSION

The results of this study showed that, AST significantly increases as the dosage increases from 5ml/kg to 15ml/kg. An increase in AST is an indicator of liver problems. In addition, AST is not only found in the liver but also in other organs like the muscles, heart, kidney, brain, lungs and amongst others so, this enzymatic increase also specify heart and kidney dysfunction. AST exist in two isoenzymes forms, Cytoplasmic and the Mitochondria forms. A rise in the mitochondria form is indicative of tissue necrosis in myocardial infarction and chronic liver disease [12].There is also significant rise in ALT and ALP in the analyzed results from groups (2-4) treated with the Vino Gano Ginger and Herbal Liqueur with contrast to the mean value of the control group ($p<0.05$). This increase is suggestive of any kind of liver disease. According to [12], A rise up to 300IU/L is not specific to the liver but other organs like kidneys muscles. But an increase up to 500IU/L is liver specific, maybe from hepatitis or chemical toxin which might have occurred in this present study. ALP is an enzyme that is found the lining of the biliary duct of the liver, small intestine, bone, liver. Since ALP perform lipid transportation in the small intestine and bone calcification, elevated ALP could cause impaired bile formation and obstruction of bile flow (Cholestasis), liver cirrhosis, congestive heart failure. The results of this

present study indicate an increase in Urea of the Wistar rats treated with the Vino Gano Ginger and Herbal Liqueur when compared to the mean value of the control group ($p<0.05$). The kidney plays vital functions by producing hormones like Erythropoietin, Renin and others, in addition to hormonal production, the kidney also excreting toxic wastes in the body of which urea isn't exceptional. An increase the urea suggests kidney dysfunction this is corroborated by the findings [14] on the Toxicity Studies of Yoyo Cleanser Bitters Poly Herbal Formulation In Albino Rats. Urea, which is a nitrogen- containing compound is the end product of protein metabolism. The kidney excretes almost 80-85% of the urea. If there is an increase in the serum level of urea, the kidney (renal) clearance rate is impaired. Urea can rise in the serum when conditions such as dehydration, high protein diet, upper gastrointestinal bleeding. There is no significant increase in the level of Creatinine level between the Vino Gano Ginger and Herbal Liquor treated groups and the control. This result showed that Vino Gano Ginger and Herbal Liquor has no significant effect on the glomerular filtration rate. From this result, there is reduction in the mean value of the Total Protein in the Vino Gano Ginger and Herbal Liquor and the control group. Bodily growth and maintenance is a function of protein. Reduction as seen in this result could lead to sarcopenia, hair, anemia and amongst others.

A significant increase in mean Total Cholesterol was noticed in the Vino Gano Ginger and Herbal Liqueur treated Wistar rats as compared to the control group($p<0.0$). This rise could lead to atherosclerosis that occurs when plaque buildup is accumulated in the arteries, heart attack is inevitable when cholesterol is formed in the arteries, obstructing blood and oxygen flow; Angina, which is characterized by chest pain and spasms, is the result of the limited blood circulation in the arteries clogged by too much bad cholesterol.

There is significant increased level of the Enzyme Lactate Dehydrogenase [LDH] in the Vino Gano Ginger and Herbal Liqueur treated groups than the control group (table 2). LDH is an enzyme that catalyzes the conversion of lactate to pyruvate, releasing adenosine triphosphate (ATP) as energy. LDH is an enzyme used to diagnose Myocardiac Infarction. This elevation in the treated group can result from haemolysis, leukemia and myocardiac infarction, Cerebrovascular accident, heart attack, infectious mononucleosis which was earlier reported by [15]. .

CONCLUSION

Biochemical parameters are Biomarkers used to evaluates the functionality of the liver, kidneys and the heart. The present finding showed that Vino Gano Ginger and Herbal Liqueur is toxic for human consumption. This is prominent because, men take this liqueur to enhance their sexual libido and performance to satisfy the feminine gender. The curiosity of sexual performers and satisfaction is directly proportion to the volume of intake of this herbal liqueur which is inversely proportional to excess [abuse], which inadvertently lead to various illnesses and sometimes death during copulation.

NOTE:

The study highlights the efficacy of "POLYHERBAL" which is an ancient tradition, used in some parts of India. This ancient concept should be carefully evaluated in the light of modern medical science and can be utilized partially if found suitable.

COMPETING INTERESTS DISCLAIMER:

Authors have declared that they have no known competing financial interests OR non-financial interests OR personal relationships that could have appeared to influence the work reported in this paper.

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