DESCRIPTION OF SERUM *GAMMA GLUTAMYL TRANSFERASE LEVELS* IN CONSUMERS OF TRADITIONAL ALCOHOLIC BEVERAGES IN GORONTALO CITY

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ABSTRACT

Alcohol is an addictive and psychoactive substance that causes changes in the body's systems, both acute and chronic. Alcohol abuse can cause various malfunctions in human organs, such as the liver and pancreas, and trigger cancer. Traditional alcoholic beverages can cause multiple health problems. This research method uses descriptive cross-sectional research, which is observational research with a quantitative approach. The population in this study consisted of people in Gorontalo who consumed traditional alcoholic beverages. The sample used was 15, and the sampling techniques used were purposive. The results obtained *Gamma Glutamyl Transferase* levels of traditional alcoholic beverage consumers in Gorontalo city who have normal serum *gamma-glutamyl transferase* age category 10-18 amounted to 2 people (13.33%), age category 19-27 years amounted to 10 people (86.67%). Most of the respondents who made the research sample had a frequency of consumption of traditional alcoholic drinks per week 1 time as many as 10 people (66.67%) and a frequency of consumption of conventional alcoholic drinks per week 2-3 times as many as 5 people (33.33%). Most respondents who made the research sample consumed traditional alcoholic beverages for less than 5 years, totaling 11 people (73.33%), consuming traditional alcoholic drinks for less than 5 - 10 years, totaling 4 people (26.67%)..

Keywords : Alcohol , Traditional , Gamma Glutamyl Transferase

INTRODUCTION

Man is one of creature life in need source energy in its reproduction is one of for example food and drink. Food as well as drinks consumed man every the day own function so abundant. However There is a number of individual consume dangerous drinks For man like drink hard, drink This own hazardous substances For the consumer namely one of them is substance adaptive in the form of alkohol. Content This capable cause decline awareness of its consumers [1].

Regulation of the Minister of Finance of the Republic of Indonesia No. 160 of 2023 has state that drink hard containing alcohol like Ethyl alcohol or ethanol with the abbreviation EA is goods liquid, clea, and resembles water with compound organic with one name formula chemical C2H5OH, which is produced with method fermentation and also distillation in [1].

Drink alcoholic capable differentiated with method see from type drink as well as existing content in mixture in it. Category drinks that have content the lowest ethanol

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Why thus, the thing This because of mibamn the can carbonated with percentage at 1%. Another thing with alcohol containing ethanol with Average levels reach 0.5% -8 % beer. Ethanol contained No exceed from 15% figure on Liqueur, content ethanol with number the generally is in spirit drinks. Percentage ethanol at 7 %-24% which can categorized Enough Lots This contained in wine fruit, palm wine until wine rice. Ethanol content highest is at 40 %, the level This owned on drinks whiskey that is not not enough from percentage 40% [1].

Character from adaptive alcohol is substance psychoactive capable of result in existence changes to the system immunity body, good I and also chronic. Misappropriation alcoholic beverages can cause function from organ body man own disorders, such as in body organs liver, pancreas, and able to trigger disease cancer. Other effects of alcohol namely effect teratogenic to the fetus in content [1].

Life man with habits, behavior and style life that is not Enough categorized Healthy capable damage liver organ function. Liver organ damage usually called with disease heart alcoholic liver disease (*alcoholic liver disease*). This is one of disturbance function liver affected by drinking alcohol with time long enough and the level is not determined. As for the fact the cause disease heart this, namely one of the for example life that is not healthy which is often applied when age move on mature so matter this is what can make a condition dependence on the consumer. Such as dependence on the wrong drug use or illegal drugs and drinks hard containing alcohol [2].

Heart or the liver is one of the body's organs humans are vital for their lifetime human . Disturbance will attack body man If liver condition is not be noted . In the detoxification process , metabolism and immunity are very necessary. For function liver . Function this is very crucial for body organs man matter This due to body organs in a way overall own connection with the liver . A heart that doesn't guarded capable influence function heart own disturbance until end with attack disease heart such as hepatitis, cancer , to cirrhosis . If this happens This No processed as good as maybe , thing this is what is capable bring condition body man in danger . Then from that , the importance look after health body We mainly internal organs body man like heart and not do behavior and also life at risk [2].

Heart have objective as well as crucial function for body through stages that influence metabolism, immunity, and detoxification. Filters blood that is directed to the intestine using this portal vein is function main from Be careful Then change and save material food brought through the portal vein. Food has produced by the liver after that distributed use blood to part body that needs it. However, the condition and health heart disturbed, then stage the will disturbed [2].

Organs that have bigger size wow big namely is heart. He have Lots function important metabolism. This change nutrition in food We become substances that can used body , save substances this , and supply it to cell moment needed . It also absorbs substances poison and change it become substances that are not dangerous or ensure substances the issued from body [3].

Heart man mature own heavy about 1.4 kg (3.1 pounds) and was found in the lower abdomen on right , below diaphragm . This eat enough space many in the section bone ribs below and some space in the stomach left above too. From the view outside , can differentiated lobe right own size more from size of organs in general and lobes left that has bigger size small . Second lobe the separated by connective tissue heart to cavity stomach . bladder gallbladder , place storage gallbladder , found in the pit small in part lower heart [3].

Misuse committed man to drink hard in the form of alcohol is quite a problem develop all over the world. In 2018 WHO stated number death caused by the presence of consumption alcohol worldwide reaches the number 3 million case death per year If in percentage reach number by 5.3% of number death in a way comprehensive. Causes from case the caused by a disease that attacks system immunity body man in the form of tuberculosis, HIV/AIDS and diabetes. Men cause case more death Lots from Woman namely with total 2.3 million death [4].

Based on results issued by RISKESDAS (2018) figures from addict alcoholic drinks in society in Indonesia have age over 10 years to the top reach figure 3.3%. From the results the examination that has been conducted by Indonesian Demography and Population in 2017 said the data on drug addicts alcohol with type sex boys aged 15 – 19 years capable reach percentage at 28.6 % and the figure percentage as many as 50.3% relate to age age 20-30%. While amount percentage of women with age 15 – 19 years reaching 3.4%

then in women with age 20 – 30 years reach up to 6.7% [5].

From the results Rikesdas (2018) states size from consumption drinks containing alcohol in Gorontalo City with age over 10 years is considered very high . The position of the Gorontalo City Region occupies position Fourth National Regional Consumption drink alcohol (liquor). Proportion consumption alcohol in Gorontalo Province is at a level of 11.3%. In addition it's at the national level is at the level of 3.3% [5].

Based on PP No. 74 statement in 2013 Alcohol traditional, for example drink with rat brand namely there is categorized drinks traditional made from material sap coconut and also ingredients the fermentation that is needed at the moment This capable become an integral part of culture and traditions in various people all over the world, especially in the Gorontalo Region. Consumers drink alcoholic considered as part of life daily among the community until own relatedness with pattern life among age young, and method social others. However, the influence behavior consume alcohol traditional towards Health.

When someone has a habit of consuming alcohol for a long time, it can have side effects on liver function. This is what can affect liver tissue slowly. In addition, the effects of drinking alcohol can cause reversible fatty liver. Ethanol is one of the most important compounds of alcohol. This compound is able to penetrate the intestinal organs, this is because ethanol is easily soluble in water and fat. Simultaneously, the body is able to absorb 80-85% of ethanol, then metabolized in the

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liver and the rest is excreted through the lungs and kidneys. Approximately 90% of alcoholics are attacked by fatty liver. Heavy drinking for a long time can cause hepatitis. 70% of people with alcoholic hepatitis can develop liver cirrhosis, this condition is a condition where the liver tissue is damaged and then replaced by scar tissue or fibrosis [2].

a. Alcoholic Fatty Liver Disease

Accumulation of lipids in irregular amounts in the liver. When metabolic changes in the liver can cause increased triglyceride deposits in the liver cells. When the liver enlarges to become larger than its normal size, it can cause discomfort in the right abdominal area. This condition is generally not considered serious and can be reversed when alcohol consumption is stopped. Fatty liver is not specific to alcohol consumption.

b. Alcoholic Hepatitis

Alcoholic hepatitis is known as liver inflammation. This pathogen is caused during the development process of the liver that has more lipids or excessive alcohol consumption. Symptoms that can be felt can range from mild to severe. Acute alcoholic hepatitis can be relieved by abstaining from alcohol but recovery takes a long time. Chronic hepatitis can cause cirrhosis and liver failure .

c. Cirrhosis of the Liver

ALD (*Alcohol Liver Disease*) is the final stage that has no chance of treatment because this disease can no longer be cured. Normal tissue with stages replaced by scar tissue, can affect the performance of liver

function severely. This infection can affect end-stage liver disorders (liver failure) .

Consuming alcohol with sufficient amount tall capable result in diverse pathogen , one of functions owned heart namely in the form of cirrhosis alcohol , or can it is said with designation cirrhosis Laënnec . This is occurs when there is abuse alcohol with term Long time . One of the actions to be able to know existence disturbance heart , can done with existence examination that has relation to function heart in the form of examination (SGOT), (SGPT), (ALP), (GGT) [6].

Consumption alcohol capable trigger so Lots disease , one of for example namely disturbance function heart like Disease Heart Alcoholic (PHA). This is disease diffusion liver caused by consumption drink hard with term Long time in amount certain . Emphasis moment Maintaining Liver Health must done as good as maybe . One of emphasis not to experience disturbance function heart namely with method protect any existing organs in body with the optimum so that can prevent all my organs are broken end with serious illness . Based on opinion Angelicunnisa et al. , (2023) there is a number of influence moment No do inhibition disease heart that is :

a. Disturbance Function Heart

Heart own crucial function for body through a process that influences metabolism , immunity , and detoxification . Filters blood sent using the portal vein is one function main from liver . After that the liver organ change as well as keep material food that has been sent by the intestines. After the food processed by the heart matter That Then distributed using blood to part body that

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needs it . However moment Liver Health Condition own disturbance , then step by step it will also disturbed [2].

b. Disturbance Balance Body

Heart own role important in most organs of the body human beings who participate act out role in look after need member or body organs others . In the section hematology heart own function For keep in the form of vitamins, substances iron and copper. Besides That heart also own role to problem sexual . Role in hormone metabolism sex and producing and carrying proteins needed for needs reproduction and development . When balance function heart disturbed so that's one of them sign No guarded with true [2].

c. arise Disease

Moment damage heart Liver organ health occurs will experience decline performance or The same as it is with disturbance disease heart so that can hinder function heart . Factor of influence disease heart shared become some parts caused by alcohol , fat liver (Non-Alcoholic Fatty Liver Disease), and patterns life that is not regular . Stimulating pathogens heart caused by Because tdai existence inhibition so that potential endanger life . Condition the heart that experiences damage so severe , and not existence inhibition as well as handler in a way periodic capable increase risk death [2].

d. Decreased QoL (*Quality of Life*)

In symptoms (such as pruritus, cramps muscle , disorders sleep , dysfunction sexual dysfunction , fatigue , and gastrointestinal symptoms) have tested important in to show quality life in sufferers disease cirrhosis heart [2].

GGT is one of the examination is carried out when someone want to obey whether himself own disturbance function liver . The clinical significance is very important in GGT measurements which have function with role of usage indicator alkohol . Definition from GGT which is one of the content enzyme microsomes . Content This capable increased in addicts alcohol , barbiturates , phenytoin , and other drugs certain . This is because of existence activity induction synthesis enzyme new as response departure compound that . Mix on the rise activities carried out by GGT in hepatocytes followed by with existence increase damage hepatocellular will increase improvement serum GGT levels by a person consumer alcohol . Patients who reach 60-80% are declared own problem addicted alcohol describe improvement serum GGT levels , with existence sign sign and also without existence characteristic features physique someone who has damage heart [7].

The enzyme γ - GT is one that has position on the surface of the cell membrane , which is obtained from the amount network , but the γ - GT contained in human serum origin at first from the liver organ . Lipoproteins and albumin (GGT) carry γ-GT into the serum. Most GGT has cell hepatobiliary . The presence of activity epithelium pancreas and kidneys have , result in existence influence damage or neoplasia of cells pancreas or kidneys which results in increase in serum. In GGT activities it is found damage tubule kidney so that own the relation with urine. In large amount increase in GGT will cause existence hepatocellular and hepatibiliary [7] .

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Liver and kidneys is One One enzymes found in sufficient amount low in abundant organs , glands prostate and muscles heart . GGT or Gamma-GT is one of the epitome tests whose purpose is For analyze various parenchymal pathogen type liver . In disease hepatocellular and epitobiliary generally happen increased GGT in the patient's serum . During damage cell in progress so serum levels will gstay increase Good at the beginning until damage cell stop . Checking Activity from GGT enzyme in serum or plasma can conducted in the Laboratory as a function test heart However matter This No is a function test heart in detail [7] .

Microsomal enzymes that have increase in addicts alcohol , barbiturates, phenytoin and some certain other drugs . Alcohol can absorb into microsomes and process more Lots enzymes , but also results in existence damage to organs body namely damage liver . After 12 – 24 hours the GGT levels in body will increase for the consumer people alcohol with a very large number , with possibility can increase in period 2 – 3 weeks time duration until intake alcohol discontinued . Gamma-GT examination is estimated more sensitive than inspection alkaline phosphatase (ALP). The amount of GGT in serum is able to increase in response drug as well as poison [7] .

From the narrative on make researcher interested do study with title "Description of Gamma-GT Levels in Consumers Drink Alcoholic Traditional in Gorontalo City".

RESEARCH METHODS

Type study This use type study descriptive observational that is For Knowing the Overview of Serum *Gamma Glutamyl Transferase* Levels in Consumers Drink Alcoholic Traditional in Gorontalo City. The approach used by researchers namely study approach quantitative aiming For Knowing the Description of Serum Gamma Glutamyl Transferase Levels in Consumers Drink Alcoholic Traditional in Gorontalo City.

Location has been carried out in Gorontalo city and inspection *Gamma glutamyl* transferase levels serum at the Prof.

Characteristics	Check up result *Gamma Glutamyl Transferase* (U/L)			
Age (years)	Normal	Presentation (%)	Tall	Presentation (%)
10-18	2	13.3	0	0.0
19-27	10	66.67	3	20.0
>30	0	0.0	0	0.0
Amount	12	80%	3	20%

Dr. Aloei Hospital Laboratory Saboe City of Gorontalo. With time study was implemented in the month August - September 2024.

RESEARCH RESULT

1. Description of Research Results

Research location This carried out at Prof. Dr. Aloei Regional Hospital Saboe City of Gorontalo with objective For Determining the Serum Gamma Glutamyl Transferase Levels in Consumers Drink Alcoholic Traditional in Gorontalo City, samples were taken respondents who consume drink alcoholic traditional in Gorontalo city .

Determination sample in research done with using 15 respondents with technique Purposive sampling is obtained as much as Respondent as amount sample

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everything originate from people in the city gorontalo . Research started with perform venous blood sampling then done inspection Gamma glutamyl transferase levels in the Prof. Dr. Aloei Regional Hospital Laboratory Saboe with Mindray BC-240 Clinical Chemistry instrument .

1. Characteristics Respondents

Distribution characteristics Respondent based on group age based on Ministry of Health shared into 5 groups Age : infants and toddlers >5 years , children 5-9 years , teenagers 10-18 years , adults : 15-59 years and elderly 60+ years.

a. **Distribution characteristics Respondent based on group age in Gorontalo City**

Characteristic features Respondent based on group age in Gorontalo City can seen in Table 4.1:

Table 4.1. Characteristics Subject Study

Based on Table 4.1 has depicted respondents who have serum *gamma glutamyl transferase* normal category aged 10-18 amounted to 2 people (13.33%), category age 19-27 years totaling 10 people (86.67%), category age more from 30 years No there is . While level own serum *gamma glutamyl transferase* tall category aged 10-18 amounted to 0 people (0.0%), category age 19-27 years totaling 3 people (20.00%), category age more from 30 years also not There is

a. **Distribution Characteristics Respondents Based on Frequency**

Consumption Drink Alcoholic Traditional per Week

Characteristic features Respondent according to frequency consumption drink hard traditional per week in Gorontalo City can seen in table 4.2:

Table 4.2. Frequency Consumption Per week

Frequency Consumption (per week)	Examination Results *Gamma Glutamyl Transferase* (U/L)			
	Normal	Presentation (%)	Tall	Presentation (%)
1 time	7	46.67	0	0.0
2-3 times	5	33.33	3	20.0
>3 times		0.0	0	0.0

Based on Table 4.2 has depicted with sufficient amount Lots respondents who were made sample study frequency consumption drink alcoholic traditional once a week as many as 7 people (46.67% and frequency consumption drink alcoholic traditionally 2-3 times a week as many as 5 people (33.33%). whereas more out of 3 times no There is .

b. **Characteristics Respondents Based on Duration Consuming Drink Alcoholic Traditional**

Characteristic features Respondent according to term long consumption drink hard traditional in Gorontalo City can seen in table 4.3:

Table 4.3 **Characteristics Respondents Based on Duration Consuming Drink Alcoholic Traditional**

Duration consume	*Gamma Glutamyl Transferase* Results (U/L)

drink alcohol traditional	Normal	Presentation (%)	Tall	Presentation (%)
<5	8	53.33	0	0.0
5-10	4	26.67	3	20.0
>10	0	0.0	0	0.0

Based on Table 4.3 has The average of the respondents used is depicted sample study consume drink alcoholic traditional not enough from 5 years totaling 8 people (53.33%), consumed drink alcoholic traditional not enough from 5 – 10 years totaling 4 people (26.67 %). consume drink alcoholic traditional more from 10 years No There is .

2. Serum *Gamma Glutamyl Transferase* Levels in Respondents

Based on results obtained inspection level *gamma glutamyl transferase* serum in samples Respondent can noted in table 4.4:

Table 4.4 Results of Examination of Respondents' Serum *Gamma Glutamyl Transferase* Levels .

Level Gamma Glutamyl Transferase (U/L)	N	%	Mean (U/L)	Median (U/L)
Low	0	0.0%	0	0
Normal	12	80.0%	23.33	21.60
Tall	3	20.0%	47.67	45.00

Based on Table 4.4 has depicted as an average of respondents who were made sample study own level normal serum *gamma glutamyl transferase , which* amounted to 12 people (80.0%) with mean value of 23.33 U/L and median value of 21.60 U/L and has level serum *gamma glutamyl transferase* high (abnormal) 3 people (20%) with mean value of 47.67 U/L, and median value of 45.00 U/L and levels low (abnormal) *gamma glutamyl transferase* was 0 people (0.0%).

DISCUSSION OF RESEARCH RESULTS

Inspection level *gamma glutamyl transferase* in research This conducted at the Prof. Dr. Aloei Regional Hospital Laboratory Saboe City of Gorontalo, taker sample Respondents' blood was tested in Gorontalo City. The results of the examination level *gamma glutamyl transferase* serum in the respondents ' serum to obtain the lowest level , namely 10 U/L; value highest , namely 56 U/L; and has level normal serum *gamma glutamyl transferase , which* amounted to 12 people (80.0%) with mean value of 23.33 U/L and median value of 21.60 U/L and has level serum *gamma glutamyl transferase* high (abnormal) 3 people (20%) with mean value of 47.67 U/L, and median value of 45.00 U/L and levels low (abnormal) *gamma glutamyl transferase* numbered 0 people (0.0%) . In conditions that are classified as normal, there are balance in formation enzymes and during the destruction process from enzyme said . If it happens existence disturbance and also damage to cells body or existence improvement cell membrane permeability , enzymes the more Lots will out to room extra cells and flow to circulation blood , therefore can used as means servant suspicion disease certain , same as it is with disease heart [7] .

Based on research that has been implemented , according to characteristic features the age of the respondents there is

existence level *gamma glutamyl transferase* , a serum that has normal and categorized values high , the highest respondent have level *gamma glutamyl transferase* with amount as many as 3 people with range age 18 – 50 years (adult), presence of improvement level Serum *gamma glutamyl transferase(gamma gt)* is affected existence diverse disturbance mainly on damage cells heart none other than influence consumption alcohol in a way excessive . But respondents who have level serum *gamma glutamyl transferase* with normal condition namely amount to as many as 12 people, according to results observation in form interview respondents who have level normal *gamma glutamyl transferase* has pattern life consumption alcohol with amount included A little from group addict alcohol . Research that has been conducted by Pangabean (2015) in line with research that has been researcher do . Research the state that human beings of different types sex there are so many men consume alcohol with group age 15 – 24 years , then increase in class age 25 – 34 years (adult). At the age of This is a very influential cause the amount sufferer disturbance heart caused by in a way down decrease or genes, things This capable influenced by the presence of substances toxic , kind of drugs , alcohol and lifestyle adult life that is not look after health , so that capable experience influence function decreased organ function [9] .

Check up result level *gamma glutamyl transferase* serum in the respondents ' serum according to long term consumption drink alcoholic traditional describe that in response addict alcohol with

time consumption not enough from 5 years duration own the number of people is 11 heads or with percentage (73.33%), consumers alcoholic beverages traditional not enough from 5 – 10 years reach 4 people with amount percentage (26.67%) [9] .

Consumption drink hard in period 5 years time or even Can more , this can result in existence change pathology in several organ systems of the body the main thing there heart heart besides it can also influence Work heart , and pancreas (Suaniti, 2012). After consuming drink hard , then the intestines will play a role For absorption reaches 80% and the stomach 20%, the next process will metabolism occurs in the liver . Generally level drink hard contains alcohol in blood will increase in period time 30 – 90 minutes after consumed [10] .

CONCLUSION

From the results research on consumers drink alcoholic traditional in Gorontalo city with amount sample 15 samples obtained conclusion as following :

1. Most of the respondents who were made sample study respondents who have normal serum gamma glutamyl transferase category aged 10-18 amounted to 2 people (13.33%), category age 19-27 years totaling 10 people (86.67%).

2. Some of the respondents were made sample study frequency consumption drink alcoholic traditional once a week for 10 people (66.67%) and the frequency consumption drink hard traditionally 2-3 times a week as many as 5 people (33.33%).

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3. Most of the respondents who were made sample study consume drink alcoholic traditional not enough from 5 years totaling 11 people (73.33%), consumed drink alcoholic traditional not enough from 5 – 10 years totaling 4 people (26.67%).

4. Respondents who have normal gamma glutamyl transferase levels were found in 12 people (80.0%) and had serum gamma glutamyl transferase levels were high in 3 people (20%).

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