



Effectiveness of Fig Leaf (*Ficuss carica L*) Decoction on SGOT SGPT Serum Level in Male Wistar Strain with Acute Hepatitis Model

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ABSTRACT

Acute Hepatitis is the inflammation of the liver that is caused by viruses, alcohol and drugs which are characterized by the increasing SGOT SGPT level. The objective of this study is to determine the effectiveness of fig leaves (*Ficuss carica L*) decoction towards the decrease of SGOT SGPT serum on male wistar rats in critical hepatitis model. The object of this study is 30 male wistar rats with the age of 2-3 months and weight 180-200 grams and randomly divide into 3 groups, which are the negative group that is only feed and watered, the positive group and the treatment groups are given paracetamol 120mg/ orally for 7 days. The treatment group is given 0.65 gram/ day of fig leaves decoction for 7 days. One way ANOVA of SPSS version 24 is used to analyze this research. The result of the study shows that there is a significant difference in SGOT serum level between the treatment group, positive group and negative group ($p < 0,05$). And there is a significant difference in SGPT level between the treatment group and the positive group ($p < 0,05$). The conclusion of this study is tin leaves (*Ficus carica L*) steeping water has an effect towards the decrease of SGOT SGPT in male Wistar rats in critical hepatitis model.

Keywords: Paracetamol, SGOT, SGPT, *Ficuss Carica L*

INTRODUCTION

Liver is the categorized as biggest vital organ in the body located in the upper right abdomen. The living and normal liver indicated with deep red color since it is rich with blood supply. The liver weighs around 1200-1500 grams. Most of the liver is located in the deep arcus costalis dextra and hemidiaphragma dextra separating the liver from the pleura, pulmo, pericardium and cast. The liver lies to the left reaching the hemidiaphragma sinistra. The liver is divided into four lobes namely dextra lobe, caudatus lobe, sinistra lobe and qaudatus lobe . liver has thin connective tissue layer, known as Glisson's capsule and the outer part is covered by the peritoneum. Arterial and venous blood travels between the liver cells through the sinusoid and will be flown into the central vein. Each centralis veins will lead to hepaticae

veins, There is a *canalis hepatis* formed from *hepatica* arteries canal, *portae hepatic* vein and *ductus choledochus* branch (12 *Hepatic triad*). In addition, there are also bile that form capillaries, namely *canaliculi bile* that surround the peripheral lobules of the liver (Nuha regina, 2018). Liver has several functions namely, the carbohydrates metabolism as storing large numbers of glycogen, composing galactose and fructose to glucose, gluconeogenesis, and forming many important compounds from carbohydrate metabolism, protein metabolism such as deamination of amino acids, formation of proteins plasma, formation of urea to remove ammonia from body fluids, and help other compounds of amino acids and fat metabolism such as oxidizing fatty acids to provide energy for other body functions, forming cholesterol, phospholipids and lipoproteins, forming fats from carbohydrates and proteins (Noah Regina, 2018).

The liver has a very important role to mobilize and detox any drugs or other substances that invested in the nature of the body because the liver is the first gastrointestinal tract organ that exposed to toxic substances (Diah krisnansari, 2014). There are several things that cause impaired liver function, namely, virus infections, primary autoimmune diseases, and drug use (hepatitis toxicity) so that some of these disorders can cause inflammation of the liver or often called both acute and chronic hepatitis. Liver is highly potential to damage, the incidence of liver damage in the world has shown a significant number (Imantika christina. 2016). World Health Organization (WHO) estimates that hepatitis caused 1.34 million deaths worldwide in 2015. 96% of it is the result of the complications of infection with hepatitis B virus (HBV) infection as much as 66% and hepatitis C virus (HCV) as much as 30%, Meanwhile in hepatitis A and hepatitis E respectively produce mortality by 0.8% and 3.2%. The world health organization said the number of deaths caused by hepatitis was almost equivalent to deaths caused by tuberculosis. Long-term complications can threaten the safety of someone's life (WHO, 2017). There are estimated to be a total of 1.5 million cases of Hepatitis A worldwide, but seroprevalansi data show that there are ten million of Hepatitis A virus infections that occur in every year (Wasley et al. 2006). In general, the incidence of hepatitis occurs due to poor sanitation and insufficient clean water. Based on data from WHO, in developing countries with poor sanitary conditions and hygienic practices, nearly 90% have been infected with hepatitis A before the age of 10. Based on the global burden of disease study in 2010, from 1980 to 2010 hepatitis A has caused 102,000 deaths in 197 countries (Lozano, 2013). In Indonesia, based on the results of basic health research (Riskesdas) from 2007 to 2013, hepatitis experienced an increase in the proportion of patients

with hepatitis from 0.6% to 1.2%. When converted into the absolute number of Indonesian population in 2013, it is equal to 248,422,956 people, it can be said that the population affected by the hepatitis virus is 2,981,075 people (budiyanto.2016).

A liver damage condition can be seen and ascertained by the results of an increase in activity in transaminase serum levels, namely SGOT (Serum Glutamate Oxaloacetate Transaminase), SGPT (Serum Glutamate Pyruvate Transaminase), Bilirubin, GGT (γ - Glutamyl Transeptidase), protein and alkaline phosphatase (Sri oktavia.2017). SGOT and SGPT enzymes are aminotransferase enzymes that are present in the liver in relatively large amounts. When there is a damage membrane cell of the liver, SGOT and SGPT enzyme levels will come out of the liver into the bloodstream, therefore, the levels of these enzymes are one of the indicators of liver damage. So, to know the damage to the liver can be determined through an increase in serum levels of SGOT and SGPT (Imantika Christina.2016).

Paracetamol was discovered in 1878 by Morse and began to be used in the medical world in 1893. Paracetamol is used for pain management during surgery or postoperatively, either orally, parenterally, or rectally (Bhattacharya 2013). Paracetamol acts on the central nervous system through inhibition of the cyclooxygenase pathway and inhibition of supraspinal pain through the toninergic cereals (Hadi sumitro, 2018). Paracetamol is the drug that frequently used by the public for healing the body. Paracetamol is a drug that contains analgesic substances which can eliminate or minimize pain. Antipyretics substances are frequently used to lower the temperature of the body (Lee WM.2003). Paracetamol with a curing dose is relatively safe to be used (Zhao JQ.2009). Otherwise, if paracetamol consumed in high doses it can damage the liver due to the formation of free radicals in the cells of the liver. The liver damage caused by the paracetamol metabolism namely N-acetyl-para-benzoquinone-imme (NAPQI) which cannot be neutralized by liver glutathione. N-acetyl-para-benzoquinone-imme (NAPQI) has toxic properties that can cause the formation of a free radicals chain (Berata IK. 2011). So the use of paracetamol at inappropriate dose can cause damage to the liver or the occurrence of sudden inflammation (acute hepatitis) to be a chronic disease (hepatitis chronic) (Sri oktavia, 2017).

In our society tradition, especially those who has bad access to health services, plants are the main medicine used by these communities. The use of plants as medicine since ancient times has been used by Indonesian people as an effort to prevent disease, increase endurance, restore fitness, and even have an effect on beauty for women. Until now, the use of traditional medicine in Indonesian still regarded as the most important place in maintaining public health

(Sudharmono.2014). Therefore, with the term of back to nature, the use of natural ingredients used as traditional herbal medicines is increasing, not only in areas far from health services, but also the urban society who are close to health services also choose to use traditional medicines. A study in 2013 successfully provided evidence of a very positive effect on the use of herbal medicines as alternative and complementary flames (Nahleh Z. 2003). So until today there are many groups of people who trust in using herbs, they believe that natural medicine has no side effects compared to the drugs with many intolerable side effects.

Figs (*Ficus carica* L) is a plan species with flower and produce consumable fruit. This plant comes from the moraceae family. Generally, this plants are known as fig plants which have been used by the community as food and medicine for centuries (Azlinda Mitha.2019). The fig tree is a plant that is widespread in tropical and subtropical regions. Figs is also widely cultivated because it is believed to treat various diseases. In Indonesia, Gresik, East Java, the fig leaves have long been used as tea to treat diabetes mellitus. With the development of the science, there were studies that have revealed the content of the fig tree start from its' leaves, fruits, and roots. Nutrient content of fig, are fiber, vitamin A, vitamin C, calcium, magnesium, and potassium that rely needed by the human body (Eva agustina.2017). Previous studies have examined the presence of compounds contained in the fig plants; arabinose, β -amyryns, β -carotines, glycosides, β -setosterol and xanthotoxol (Aref et al., 2011; Jeong et al., 2009), 6-O-acyl- β -dglucosyl- β -sitosterol with palmitoyl, linoleyl, stearil and derivatives of oleyl which are strong cytotoxic compounds (Aref et al., 2011; Jeong et al., 2009; Rahmani & Aldebasi, 2017). The fig plant is very functional because its roots, fruits and leaves have healthy benefits. But the easiest part, the most practical and very potential as antioxidant is the leaves. The fig leaf is a simple leaf, has a rough texture with a leaf length of around 6-18cm and has a width of about 5-15cm (Azlinda Mitha.2019). Fig leaf has been shown to inhibit free radicals by DPPH 70% and 50% with nitrite oxidation methods respectively with concentrations of 170 and 500 μ g / ml (Oliveira.2010). In Indonesia, Fig leaf is used as a medicine for hypertension, kidney stones, and diabetes. Fig leaf has been reported as hepatoprotektan, antimicrobial, antioxidant, antibacterial, immunomodulatory, anti-diabetic, anti-inflammatory , antipir conduct, and anti-cancer (Ahaddin, 2014).

Based on the function of the fig leaves as antioxidants , hepatoprotektan, antimicrobial, antibacterial, immunomodulatory, anti-diabetic, anti-inflammatory, antipir conduct, and anti-cancer , then the previous research is used as reference to investigate and prove how big the effects of Fig leaf in treating acute hepatitis or minimizing, reducing of even curing the

damage of the liver, by testing the effectiveness of Fig leaf (*Ficus Carica L*) decoction on decreasing serum SGOT and SGPT in male wistar strain rats that have been induced with the paracetamol.

METHODS

This research was conducted in July 2019. The dependent variable in this study was sgpt serum in male rats and the independent variable was steeping water from fig leaves (*Ficus Carica L*). The material used in this study was leaves from fig plants (*Ficus Carica L*) obtained from Cimencyan Bandung . The object of this study is using 30 male Wistar strain of acute hepatitis in age of 2-3 months with an average weight \pm 180-200 grams and the weight of these mice after being adapted to completion of the study should not increase or decrease. weight passes through \pm 10%. Then 30 of the mice were adapted in the lab for 7 days by the method of 12 hours bright 12 hours dark . Then 30 rats were randomly divided into 3 groups, namely the treatment group, positive control group, and negative control group. Each group consist of 10 male Wistar strain rats. The treatment group and the positive control group were induced with 120 mg of oral paracetamol with the aim of increasing the level of sgot and serum sgpt serum for 7 consecutive days, while the negative group was only feed and watered as usual. Then after treatment the treatment group was given tin leaf steeping therapy. The leaves used are leaves that have been dried in the sun and use 3.6 cc brewing the leaves are weighed in as much as 3.6cc and brewed in boiling water as much as 100cc for 30 minutes but the boiling water used for therapy is only 0.65 grams for 7 days .

Research procedure

1. Negative control group: 10 rat samples were only given food and drink as usual until the study ended.
2. Positive control group: 10 rat samples were given food and drink as usual, then induced with paracetamol orally as much as 120 mg / day for 7 days and not given any therapy until the study ended.
3. Treatment group: 10 rat samples were given food and drink as usual, then induced with patacetamol orally as much as 120 mg / day for 7 days, and given boiling water therapy as much as 0.65 grams of tin leaves in steeping was 100cc and given to the sample as much as 3,6cc / day orally for 7 days.

On day 1 to day 30, the mice were adapted, then on day 8 to day 14 the treatment group and the positive control group were induced using paracetamol orally as much as 120 mg / day. On the 15th day, sgot and sgpt serum tests were performed to provide results after the induction of paracetamol, and on the same day a 0.65gram of fig leaf therapy was administered in 100cc water that was brewed and allowed to stand for 1 minute after boiling water and was given to samples 3.6 cc / day until the 21st day. On the 22nd day, sgot and sgpt serums were re-examined to be the result data after post-stealing therapy in the treatment group.

RESULTS AND DISCUSSION

Table 1. **Data on SGOT-Pre Levels in Male Wistar Strain Rats.**

Dependent variable	(I) group	(J) group	Mean difference (IJ)	Std. Error	Sig.
SGOT_PRE	1.00	2.00	-226.92000 *	14.46229	.000
		3.00	-192,78700 *	14.46229	.000
	2.00	1.00	226,92000 *	14.46229	.000
		3.00	34.13300	14.46229	.064
	3.00	1.00	192,78700 *	14.46229	.000
		2.00	-34.13300	14.46229	.064

Tabel 1. shows the results of comparative levels of SGOT pre between group 1 (negative control), group 2 (positive control group), and group 3 (the treatment group) showed a significant different ($p < 0.05$). Thus in the negative control group and positive control group have a significant result due to the difference in results between the two, but in the positive control group and the treatment group have insignificant differences ($p = 0.064$) this is because these two groups equally induced with paracetamol as much as 120mg / day orally every five a 7 days.

Table 2. **Data on SGOT- Post Levels in Male Wistar Rats.**

Dependent variable	(I) group	(J) group	Mean difference (IJ)	Std. Error	Sig.
SGOT_POST	1.00	2.00	-964.29000 *	15,97837	.000

	3.00	-75.49000 *	15,97837	.000
2.00	1.00	964.29000 *	15,97837	.000
	3.00	888.80000 *	15,97837	.000
3.00	1.00	75.49000 *	15,97837	.000
	2.00	-888.80000 *	15,97837	.000

Table 2 shows the results of SGOT-Post after treatment, the comparison of the treatment of group 1 (negative control), group 2 (positive control group), group 3 (the treatment group) showed a significant difference ($p < 0.05$). The negative control group and positive control group showed a significant difference ($p < 0.05$). Negative control group and the treatment group showed significant differences ($p < 0.05$), positive control group and the treatment group shows a significant result ($p < 0.05$) but the previous table shows there was no significant difference ($p = 0.064$) between the positive control group and the treatment group. This is because the treatment group was given fig leaf decoction therapy, but in the positive control group no therapy was given after being induced with paracetamol. Then the second table shows a significant difference from the pre SGOT results.

Table 3. Data on Pre SGPT Levels in Male Wistar Rats.

Dependent variable	(I) group	(J) group	Mean difference (IJ)	Std. Error	Sig.
SGP T_PRE	1.00	2.00	-83.17000 *	10.82868	.000
		3.00	-97.85000 *	10.82868	.000
	2.00	1.00	83.17000 *	10.82868	.000
		3.00	-14.68000	10.82868	.378
	3.00	1.00	97.85000 *	10.82868	.000
		2.00	14.68000	10.82868	.378

Table 3 shows a comparison result of pre SGPT level. Group 2 (positive control group), group 3 (the treatment group) showed a significant difference ($p < 0.05$) as well as the negative control group and positive control group had significant results due the results of the distinction between the two. However, the positive control group and the treatment group had insignificant differences ($p = 0.378$) because both groups were induced with 120 mg / oral paracetamol every day for 7 days.

Table 4. Post SGPT Level Data in Male Wistar Rats.

Dependent variable	(I) group	(J) group	Mean difference (IJ)	Std. Error	Sig.
SGP T_POST	1.00	2.00	-986.37000 *	18,01517	.000
		3.00	-33.22000	18,01517	.175
	2.00	1.00	986.37000 *	18,01517	.000
		3.00	953.15000 *	18,01517	.000
	3.00	1.00	33.22000	18,01517	.175
		2.00	-953.15000 *	18,01517	.000

Tabel 4 states the results of comparative levels of SGOT post- therapy. Group 2 (positive control group), 3 (the treatment group) showed a significant difference ($p < 0.05$) as well as the negative control group and positive control group had significant results ($p < 0.05$) due to the significant difference between both. However, the negative control group and the treatment group had insignificant differences ($p = 0.175$).

This was due to the results of the treatment group decreased close to the negative control group. But in the preceding table SGPT pre positive control group and the treatment group had a nonsignificant results due to equally be given induction with paracetamol as much as 120mg / orally every day diving a 7 days and in the group of negative control and treatment groups had significant results ($p < 0.05$) but in the post SGPT there was an insignificant result ($p = 0.0175$) due to a decrease that was very far and almost close to the previous results , namely the SGPT pre and in the positive control group and the treatment group became significant ($p < 0, 05$) due to the vast difference, after being given the tin leaf steeping pitch . The results of the SGTO SGPT examination carried out on male Wistar strain rats have proved that fig leaves decoction is effective in gaining the significant decrease.

Conclusion

From the research conducted, it can be concluded that steeping treatment from fig leaves (*Ficus Carica L*) has the effectiveness in reducing the levels of SGOT and SGPT serum in male wistar strain with acute hepatitis model .

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