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(<http://www.derpharmachemica.com/archive.html>) Methox Bergenin on **Total Protein, Albumin and Globulin Levels** of Wistar Ra' Blod Ida Duma Riris* Faculty of Matematics and Natural Siences, State University of Medan, Medan, Indonesia ABSTRACT This paper describes the effect of methoxy bergenin isolated from the ra's stem bark ethanol extract (*Vatica pauciflora blume*) on **the total protein, albumin and globulin** levels. The 4 × 4 ccompletely randomized design is done by envolving 16 Wistar rats of ± 3 mon age, ± 100 g weight.

Group 1 was treated by only feed as a control, and **each of the other** groups i.e., Group 2, Group 3, and Group 4 by doses of 65 mg/200 g body weight/2 ml, 130 mg/200 g body weight/2 ml and 195 mg/200 g body weight/2 ml respectively, which provided during 21 days. The Wistaratol ro lbmina lolinlev el was measured on the 21st day by Folin's phenol method.

Data was analyzed by ANOVA, and showed that administration of methoxy bergenin of the raru stemb bark ethanol extract (*V. pauciflora blume*) effect **the total protein, albumin a gu levels oWistats' bdsigany**. Keywords: Methoxy Bergenin, Herbal medicine, **Total protein, Albumin, Globulin** INTRODUCTION **Levels of total protein, albumin, and globulin** is the important parts of blood plasma, which serve to maintain osmotic pressure and carry steroid hormones, lipids and fibrinogen in the blood clotting.

Fluids move **from blood vessels into** tissues is an indication of edema, caused by decreased levels of albumin. Albumin Globulin Ratio (AGR) which is lower than the normal range also indicates the disorders of the kidneys and liver. Things like this can be

caused by the use of chemical drugs [1].

Therefore, herbal medicine has become an alternative to drug use chemicals with security considerations [2]. However, it must be ensured an herbal medicine is completely safe to use [3]. In general, herbal medicines are derived from plants that have green flavonoid compounds [4].

The existence of the levels of total protein, albumin and globulin produced in the liver, can be a basis for determining the level of the safe use of herbal medicines consumed. When liver function is abnormal or damaged, it will disrupt the metabolic secretion of albumin and globulin. This can be remedied with increasing protein intake [5] and powers of endurance [6-8].

Some experiments have explained the impact of the plant extracts against the levels of total protein, albumin and globulin. Extract onion *Allium cepa* Linn has been informed not significant [9]. However diverse the fraction of *Vernonia amygdalina* resulted in a significant increase compared with the group given paracetamol.

This summed potential as hepatoprotective [10]. Likewise, the ethanol extract of *Annona muricata* given to mice can be used for treatment of liver damage [11]. Effect posed by an extract of the plant should be considered when used as a drug [12], because the uses of herbal medicines are closely connected with the functioning of the heart though the liver has a great capacity to synthesize detoxification.

For this reason it is necessary to test to make sure an herbal remedy does not impair liver function [13]. Guidelines for testing can be used in the normal range for the concentration of total protein, albumin, and globulin male mice, respectively are 5.6-7.6 g/dl, 3.0-5.1 g/dl, dan 1.5-2.5 g/dl, and AGR is 1.58-2.67 [14]. Plant as a potential antidiabetic drugs are those containing flavonoids [15].

Methoxy bergenin is a pure flavonoid compound, which is obtained from the ethanol extract of the stem bark raru (*Vatica pauciflora* Blume) [16]. The test results showed that the extract has a toxicity value of LC_{50} 5.76 and potentially as a medicinal ingredient [17]. But still needs to be studied to ensure that their use does not impair liver function [18].

In connection with this, in this paper is described the impact of the provision methoxy bergenin on levels of total protein, albumin and globulin from Wistar rats. Ida Duma Riris Der Pharma Chemica, 2017, 9(13):90-94 91 MATERIALS AND METHODS Materials To obtain bergenin methoxy, *Vatica pauciflora* Blume obtained from the forest in the district of Central Tapanuli, North Sumatra, Indonesia, is processed through the extracts

by ethanol [16,17].

Healthy male Wistar rats were obtained from the Laboratory of Pharmacy, University of North Sumatra, Indonesia as many as 16 tails, which was adapted for 3 days before being given treatment. Method. A level of total protein, albumin and globulin from across the Wistar rats was measured by the method of Folin's phenol [19] before treatment.

This is done to check the health of all Wistar rats. As a rule of comparison is the normal range for the concentration of total protein, albumin, and globulin from healthy male rats, which respectively are 5.6-7.6 g/dl, 3.0-5.1 g/dl, dan 1.5-2.5 g/dl and AGR is 1.58-2.67.

The experimental group made with variations replay 4×4 , which consists of control G0 (without being given methoxy bergenin or only feed); G1 (methoxy bergenin given at a dose of 65 mg/200 g body weight/2 ml); G2 (methoxy bergenin given at a dose of 130 mg/200 g body weight/2 ml); G3 (methoxy bergenin given at a dose of 195 mg/200 g body weight/2 ml) each for 21 days. Levels of total protein, albumin, and globulin of the Wistar rats were measured again at day 21.

The measurement results were analyzed by ANOVA using SPSS. RESULTS AND DISCUSSION The results of the levels of total protein, albumin, and globulin measurements of the Wistar rats of the each group (Table 1) showed that administration of bergenin methoxy is likely to increase the 3 parameters on average.

The higher levels dose of methoxy bergenin is tend to the result in the higher of the 3 parameters relatively, but they were still at a normal range. This allows as a result of the immune system of mice is increased after the extract [8]. Table 1: Ttaproi abumiagbulie oWir ts' d te21day) Group Albumin (M \pm SD) Globulin (M \pm SD) A/G Ratio Protein total
G0=Untreatment 4.1451 \pm 0.2668 1.9992 \pm 0.0556 2.0733 6.144
G1=Dose of 65 mg/200 g body weight/2 ml 4.1967 \pm 0.0056 2.1266 \pm 0.0483 1.9734 6.323
G2=Dose of 130 mg/200 mg body weight/2 ml 4.208750 \pm 0.0096 2.199750 \pm 0.0143 1.913286 6.409
G3=Dose of 195 mg/200 g body weight/2 ml 4.226425 \pm 0.0415 2.288125 \pm 0.0265 1.847113 6.515
ThWistar total protein, albumin and globulins levels after the administration of Methoxy Bergenin with a variety of different doses looks like Figures 1-3 graphically.

Figure 1: GrphiofWiratota on lvel In the graph it appears that administration of methoxy bergenin tend to raise levels of total protein, wherein a dose of 195 mg/200 mg body weight/2 ml provide a higher total protein. However, this increase needs to be taken in

order not to cause danger because healthy categorized total protein is 5.6-7.6 g/dl [14].

With this show the use of methoxy bergenin for 21 days is still safe. Ida Duma Riris Der Pharma Chemica, 2017, 9(13):90-94 92 Figure 2: GrphiofWiramilve In Figure 2 also appears that the albumin level is increasing with increasing doses given. It is possible that a methoxy bergenin administration can strengthen the body of Wistar rats.

Figure 3: GrphiofWirabuln ve Likewise globulin shown in Figure 3 is also increasing with increasing doses given. AGR value of the group given methoxy bergenin (Figure 4) is located in the normal range 1.58-2.67. On this basis it can be stated that the methoxy bergenin not interfere with liver function.

Figure 4: GrphiofWiramigbulira Ida Duma Riris Der Pharma Chemica, 2017, 9(13):90-94 93 ANOVA results (Table 2) shows the administration methoxy bergenin with different dose levels resulted in total protein, albumin, and globulin group of Wistar rats was significantly different at .5level.Thinicates at e ro og ergen oy ffect hlevel f integrity of different liver in groups of mice [8].

Table 2: ANOVA otol ten, bumi nd oiofWirabld) Sum of Squares Df Mean Square F Sig.
 Total protein Between Groups 0.294 3 0.098 31.586 0.000 Within Groups 0.037 12 0.003
 Total 0.331 15 Albumin level Between Groups 0.015 3 0.005 7.618 0.004 Within Groups
 0.008 12 0.001 Total 0.022 15 Globulin level Between Groups 0.179 3 0.060 37.666 0.000
 Within Groups 0.019 12 0.002 Total 0.198 15 The result of the average difference (Table
 3) showed that administration of methoxy bergenin with a dose of 195 mg/200 mg
 body weight/ 2 ml lead to three parameter levels higher than other dosing. This
 situation allows that can be just as methoxy bergenin protein intake. Table 3. Multi .

Table 3: Difference mean emi f wsta rts' talpron,bumialon ve Dependent variable (I)
 Treatment (J) Treatment Mean Difference (I-J) Std. Error Sig. Total protein Go G1
 -0.17900* 0.03939 0.001 G2 -0.26425* 0.03939 0.000 G3 -0.37025* 0.03939 0.000 G1 Go
 0.17900* 0.03939 0.001 G2 -0.08525 0.03939 0.051 G3 -0.19125* 0.03939 0.000 G2 Go
 0.26425* 0.03939 0.000 G1 0.08525 0.03939 0.051 G3 -0.10600* 0.03939 0.020 G3 Go
 0.37025* 0.03939 0.000 G1 0.19125* 0.03939 0.000 G2 -0.10600* 0.03939 0.020 Albumin
 level Go G1 -0.0516500* 0.0179154 0.014 G2 -0.0636500* 0.0179154 0.004 G3
 -0.0813250* 0.0179154 0.001 G1 Go 0.0516500* 0.0179154 0.014 G2 -0.0120000
 0.0179154 0.516 G3 -0.0296750 0.0179154 0.124 G2 Go 0.0636500* 0.0179154 0.004 G1
 0.0120000 0.0179154 0.516 G3 -0.0176750 0.0179154 0.343 G3 Go 0.0813250*
 0.0179154 0.001 G1 0.0296750 0.0179154 0.124 G2 0.0176750 0.0179154 0.343 Globulin
 level Go G1 -0.1274250* 0.0281569 0.001 G2 -0.2005500* 0.0281569 0.000 G3
 -0.2889250* 0.0281569 0.000 G1 Go 0.1274250* 0.0281569 0.001 G2 -0.0731250*

0.0281569 0.023 G3 -0.1615000* 0.0281569 0.000 G2 Go 0.2005500* 0.0281569 0.000 G1
0.0731250* 0.0281569 0.023 G3 -0.0883750* 0.0281569 0.009 G3 G0 0.2889250*
0.0281569 0.000 G1 0.1615000* 0.0281569 0.000 G2 0.0883750* 0.0281569 0.009 *The
mean differences significant at the 0.05 level.

Description: Go=Untreatment (feed); G1=Dose of 65 mg/200 g body weight/2 ml;
G2=Dose of 130 mg/200 mg body weight/2 ml; G3=Dose of 195 mg/200 g body
weight/2 ml Based on the mean difference of **total protein, albumin, and globulin** level
within dose of 195 mg/200 g body weight /2 ml is highest among of them. Its increasing
can be caused by accretion of protein intake [6], or also caused by the absorption power
is increased [7].

This is made possible occurs therefore can act as protein intake and have a high toxicity
values [13] like as hepatoprotective [5,10]. Ida Duma Riris Der Pharma Chemica, 2017,
9(13):90-94 94 CONCLUSION Utilization methoxy bergenin based on the study of the
state of **total protein, albumin and globulin** can be inferred that this could be useful as
an herbal remedy that does not give effect to the deterioration of liver function, because
it is hepatoprotective.

It appears from the significance of the increase in **total protein, albumin, and globulin**
were still within normal range. ACKNOWLEDGEMENT The authors would like to thank
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