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TOXICITY OF ETHANOLIC EXSTRACT FROM STEM BARK OF *HOPEA MENGARAWAN*

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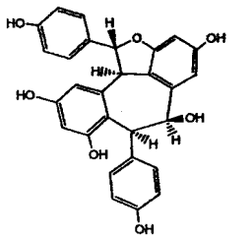
Abstract— This research was intended to investigate the acute toxicity of ethanolic extract from stem bark of *Hopea mengarawan*. Acute toxicity investigation on mice male Swiss revealed that LD_{50} of this extract on mice was 2.290 mg/ kg body weight, hence categorized as 'litle-toxic substance'.

Key word : Toxicity; *Hopea mengarawan*

Introduction

Antihepatotoxic activity tes *in vivo* of ethanolic extract of stem bark of *H. odorata. H. mengarawan* and *H. nigra* can reduce concentration of SGPT (Serum Glutamat Piruvat Transaminase) of rats, that induction by CCl_4 and also disappepar of necrocis of the lever [1-4]. In this research can be known five substances have antihepatotoxic actvity, that are balanocarpol (**1**), heimiol A (**2**), vaticanol B (**3**), vaticanol G (**4**), and hopeaphenol (**5**).



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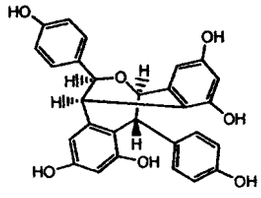

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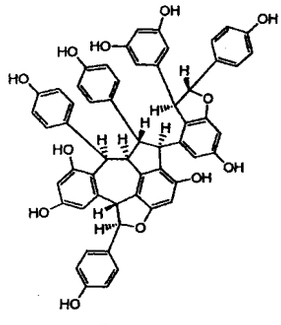

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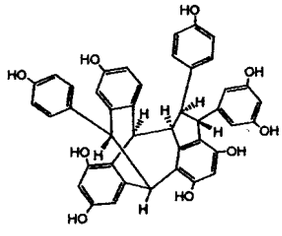

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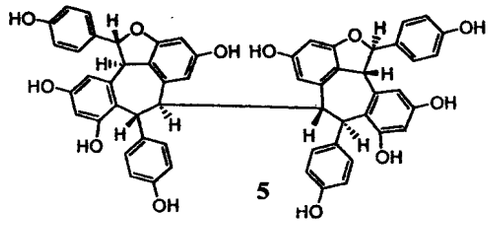

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To develop the extract of stem bark of plant Hopea, specially *H. mengarawan* become the product phytopharmaca which can be used as a new drug of antihepatotoxic which standardize, safe, with quality, require to be conducted by toxicity test, acute toxicity, subcronic toxicity at lever and kidney, and also teratogenic test. Result of this test will represent the especial consideration to its use as traditional drug and to clinical test of human being at phase research hereinafter. In this article will be studied by result of acute toxicity tests of extract ethanol *H. mengarawan*.

RESULTS AND DISCUSSION

Process of extraction by maseration of stem bark powder of *H. Mengarawan* which age have more than 40 years by using ethanol at room temperature, during 24 hours. The maseration repeated by as much 2-3 times. Extract obtained to be collected and condensed by vacuum evaporator.

The acute toxicity test: The acute toxicity test conducted by using male mice of Swiss strain with the age more or less 2 months, healthy and own the body weight more or less of equal (30-32 g). The mice used in this

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research is adapted environmentally at the research place (laboratory of medical faculty of Gadjah Mada University). To determine the variation of dose require to be conducted by orientation test to know highest dose is which technically admit of passed to a animal test, while lowest dose is minimum dose which can generate effect.Dose got from orientation used as a highest dose, after that searched by the its fold factor and determined its variation dose to each group. The variation Dose determined to use the following formula :

$F = \sqrt[r]{}$ highest / lowest dose

r = sum of variation of concentration -1

F = fold factor

In this research, the extract gift to mice by peroral and selected by three dose, (the dose killing less than 10%, 50%,and more than 90%). The observation conducted by during 14 days, covering autonomic, behavioral, sensoric, neuromuscular, cardiovasculer, inhalation, eye, gastrointestinal, and skin. And so do will be conducted histopatologi microscopicly do well by the mice which still be healthy or die after the end of experiment.

To determine the dose to be used in the toxicity acut test conducted by by giving extract ethanol *H. mengarawan* certain in solvent CMC-NA 1%, and observation the amount of mice that death like there are at table 1.

Table 1. Data of determined dose

Group	Dose	Amount of mice	Amount of the death mice	% of death
1	1,670 mg/kg bw	4	0	0 %
2	2,460 mg/ kg bw	4	1	25 %
3	3,623 mg/ kg bw	4	2	50 %
4	5,337 mg/ kg bw	4	4	100 %
5	7,862 mg/ kg bw	4	4	100 %

Dose got from the orientation result knowable highest dose is 5,337mg/ bw, lowest dose is 1,670mg/ bw. From the data is used to look for the its fold factor and its variation dose to each group. The variation dose determined to use the the following formula above.

From calculation result obtained, F = 1.473, so that variation of dose used in acut toxicity test are 1,670; 2,460; 3,623; and 5,337mg / kg bw. Observation conducted by during 14 days, covering autonomic, behavioral, sensoric, neuromuscular, cardiovasculer, inhalation, eye, gastrointestinal, and skin. And so do will be conducted histopatologi microscopicly do well by the mice which still be healthy or die after the end of experiment. Data of death Perception after 24 clock until 14 days of there are in table 2.

Table 2. Data of the death mice in acute toxicity tests

Group	Dose	Amount of mice	Amount of death	% of death	prob it
control	0,75 ml CMC-Na	6	0	0	-
D1	1,670 mg/kg bw	6	1	16	4.01
D2	2,460 mg/ kg bw	6	4	66.67	5.43
D3	3,623 mg/ kg bw	6	5	83.33	5.96
D4	5,337 mg/ kg bw	6	6	100	8.09

From calculated by above tables of LD_{50} with the linear equation regresi (logarithm of dose of vs probit), the equation of regression is, Y = 7.594 X - 20.516, at the value of r = 0.974. From the equation obtained by value of LD_{50} 2.290 mg/ kg bw. The value of LD_{50} indicate that the extract of ethanol of stem bark powder of *H. mengarawan* have the character of a few/little toxic (Loomis, 1978). Observation to mice conductedafter extract gift until 14 day, covering body weight, autonomic, behavior, sensoric, neuromusculer, cardiovasculer, inhalation, eye, gastrointestinal, and skin.The histopatologi microscopicly do well by the mouse which still be healthy or die at the end of this experiment. Observation Histopatologi conducted to all organ in mice covering heart, liver, right and left kidney, stomach, and spleen. Observation in physical, behavioral, and body weight each mice show the difference inexistence which significan between control and experiment group, while observation by histopatologis of organ in mice resulted data at table 3. The histopatologis data showed small difference condition at liver, lungs, and spleen but not significan between control and experiment group.

Table 3. Data of histopatologis of organ in mice after experiment

Group	Code	liver	Ren	lungs	spleen	Cardio-vascular	Stommach-esoph
Control	K -24 hours	MFN	-	PI	-	-	-
	K-14 day	MFN	-	-	-	-	-
D1	O -24 hours	MFN,DM	-	PI	-	-	PK and N
	O-14 day	-	-	PI	N	-	-
D2	I-24 hours	-	-	PI	N	-	-
	I-14 day	MFN,DM	-	PI	-	-	-
D3	II-24 hours	-	-	O	MK	-	-
	II-14 day	MFN	-	O	-	-	-
D4	III-24 hours	-	-	O	MK	-	-

Note :
MFN = multi fokal necrosis
DM = vakuola citoplasma on hepar cell
PI = Pulmo interalveolaris
O = acumulation of homogen eosinofilik at lumen alveoli
N = Necrosis at pulpa
K = incresed of megakariosit at limpa
PK and N = Proliferasi kelenjar and necrosis
D1-D4 = dose 1-4

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