

HISTOPATHOLOGY OF HEPATOCTYTE NUCLEUS DEGENERATION EXPOSED BY CURCUMA AERUGINOSA

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HISTOPATHOLOGY OF HEPATOCYTE NUCLEUS DEGENERATION EXPOSED BY CURCUMA AERUGINOSA

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ABSTRACT

This research is aimed at finding out the effect of Curcuma Aeruginosa given to the histopathology hepatocyte of 40 male mice, weight 25-30 g. The mice are divided into 5 treatment groups namely 1 control group, 2 infused groups and 2 squeezed groups. Curcuma Aeruginosa is given once a day and on day 11, the livers of the mice are taken and made into histopathology preparation with HE staining. The data taken are analyzed by manovafactorial and anova one way. The result shows the occurrence of hepatocyte nucleus degeneration, the highest means of karyopicnosis and karyorhexis on infused group of 10 mg/25 g body weight, are 10.22% and 49.6% ($\alpha = 0.05$). The highest karyolysis on infused and squeezed groups of 10 mg/25 g body weight, is 45.86% and 45.70% ($\alpha = 0.05$). The conclusion is that infused and squeezed Curcuma Aeruginosa given orally to male mice has caused the hepatocyte nucleus degeneration.

Keywords: Hepatocyte, nucleus degeneration, curcuma aeruginosa, mice

INTRODUCTION

Curcuma Aeruginosa is a useful herb which has been widely used as the appetite booster, helminthes medicine, etc (Santoso, 1989; Jantanet.al., 2003). It is also often used as traditional medicine in rural area in the form of infused (boiled) and squeezed. The people who use this herb sometimes do not pay attention on the dosage and how long they should consume the herb therefore they do not realize the side effect that might happen.

The WHO states that inconsistent and toxic compound found in herb could give toxic effect (Handa, 1995; Li et.al., 2008). The two reported toxics are, first, it is caused by the intrinsic factor of the herb itself related to over dosage, allergic responses such as vomiting, inflammation and diarrhea. Second, it is caused by extrinsic factor related to the mistake during preparation making such as mistakenly identifying the herbs, failure in the process of medicine making, and the occurrence of contamination (Calixto, 2000).

MATERIALS AND METHODS

The samples used were 40 male mice Balb C weight 25-30 g which were divided into 5 treatment groups namely P0 (control, given CMCNa and aquadest), P1 (consists of 2 treatment groups given 2 different dosages, infused Curcuma Aeruginosa), and P2 (consists of 2 treatment groups given 2 different dosages, squeezed Curcuma Aeruginosa). Curcuma Aeruginosa rhizome taken from Jombang was made into infused and squeezed and then dried using Freeze Dry method. Dosages given were 10 mg/25 g and 15 mg/25 g body weight in accordance with the group orally per day for 10 days.

On day eleventh, the livers of the male mice were taken to be made into histopathological study by using HE staining. Histopathological examination was done by counting the amount percentage of the hepatocytes undergone nucleus degeneration (karyopicnosis, karyorhexis, and karyolysis) from 1500 hepatocytes (Ekicinet.al., 2005). The data gained from the analysis were analyzed by using manovafactorial and then continued with anova one way.

RESULT AND DISCUSSION

Necrosis is the process of cell disfunction which is marked with the nucleus degeneration during the early stage of karyopicnosis, where the nucleus clumped or solidified and looked brighter. Next, the nucleus undergoes karyorhexis, it is when the nucleus is broken into two or more and then it undergoes karyolysis. It is when the nucleus dissolves or disappears and loses its form (McGavin et al., 2007).

The result of histopathology preparation toward hepatocyte nucleus degeneration of each group is as follows:

Table 1. Mean percentage of hepatocytes nucleus degeneration and SD as the result of *Curcuma Aeruginosa* exposition in the form of infused and squeezed.

Treatment groups	Dosage	Karyopicnosis	Karyorhexis	Karyolysis
Control	0 mg	0.39 ± 0.18 ^a	0.93 ± 0.27 ^a	4.04 ± 0.70 ^a
Infused	10 mg	7.93 ± 0.92 ^{c,d}	30.59 ± 1.33 ^d	45.86 ± 2.12 ^c
	15 mg	10.22 ± 1.32 ^e	49.66 ± 2.32 ^e	29.36 ± 2.39 ^b
Squeezed	10 mg	5.78 ± 0.90 ^b	16.03 ± 1.54 ^b	45.70 ± 2.77 ^c
	15 mg	5.93 ± 0.55 ^{b,c}	21.05 ± 1.36 ^c	53.05 ± 2.56 ^d

Superscript: Different letter on each variable shows the significant difference of each group on $\alpha = 0.05$.

The result shows the occurrence of necrosis or hepatocyte nucleus degeneration as a result of *Curcuma Aeruginosa* treatment, it proves that there is a real difference between the control and treatment group ($\alpha = 0.05$) as seen in table 1. Chan's research result proved that there is a disadvantage effect of using traditional medicine which often endangers people. Other research shows that most of herbal plant have toxic effect to specific organ and it is little known about the chronic toxic effect of a long term use, dosage used, and the lateness of herbs use termination of traditional medicine which brings about acute and chronic intoxication (Ezejioret al., 2008; Sunita et al., 2008; Dewi & Saraswati, 2009).

Infused shows a higher hepatocyte nucleus degeneration mean value than squeezed. It is caused by the heating on infused stock. The heating activates toxic substances contained in *Curcuma Aeruginosa* therefore those toxics come out of the *Curcuma Aeruginosa* cell, and the active toxic cell is able to go through the hepatocyte's membrane and the nucleus membrane. It causes chromatin to clump inside nucleus and it is related to RNA synthesis decrease. If this condition continues to happen, the cell will undergo nucleus degeneration called karyopicnosis (Mc Gavin et al., 2007).

CONCLUSION

The infused and squeezed *Curcuma Aeruginosa* given orally to male mice has caused hepatocyte nucleus degeneration and the 10 mg squeezed *Curcuma aeruginosa* per 25 g body weight was safe to be used in mice.

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