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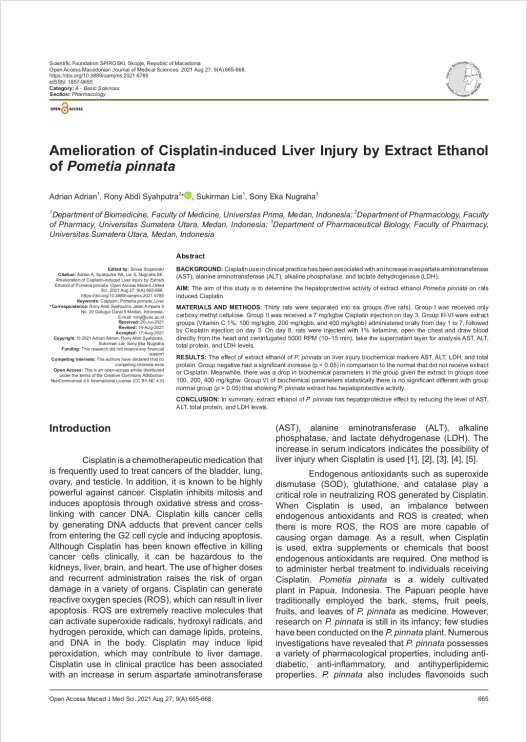

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Amelioration of Cisplatin-induced Liver Injury by Extract Ethanol of *Pometia pinnata*

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Abstract

BACKGROUND: Cisplatin use in clinical practice has been associated with an increase in aspartate aminotransferase (AST), alanine aminotransferase (ALT), alkaline phosphatase, and lactate dehydrogenase (LDH).

AIM: The aim of this study is to determine the hepatoprotective activity of extract ethanol *Pometia pinnata* on rats induced Cisplatin.

MATERIALS AND METHODS: Thirty rats were separated into six groups (five rats). Group I was received only carboxy methyl cellulose. Group II was received a 7 mg/kgbw Cisplatin injection on day 3. Group III-VI were extract groups (Vitamin C 1%, 100 mg/kgbb, 200 mg/kgbb, and 400 mg/kgbb) administered orally from day 1 to 7, followed by Cisplatin injection on day 3. On day 8, rats were injected with 1% ketamine, open the chest and draw blood directly from the heart and centrifugated 5000 RPM (10–15 min), take the supernatant layer for analysis AST, ALT, total protein, and LDH levels.

RESULTS: The effect of extract ethanol of *P. pinnata* on liver injury biochemical markers AST, ALT, LDH, and total protein. Group negative had a significant increase ($p < 0.05$) in comparison to the normal that did not receive extract or Cisplatin. Meanwhile, there was a drop in biochemical parameters in the group given the extract in groups dose 100, 200, 400 mg/kgbw. Group VI of biochemical parameters statistically there is no significant different with group normal group ($p > 0.05$) that showing *P. pinnata* extract has hepatoprotective activity.

CONCLUSION: In summary, extract ethanol of *P. pinnata* has hepatoprotective effect by reducing the level of AST, ALT, total protein, and LDH levels.

Introduction

Cisplatin is a chemotherapeutic medication that is frequently used to treat cancers of the bladder, lung, ovary, and testicle. In addition, it is known to be highly powerful against cancer. Cisplatin inhibits mitosis and induces apoptosis through oxidative stress and cross-linking with cancer DNA. Cisplatin kills cancer cells by generating DNA adducts that prevent cancer cells from entering the G2 cell cycle and inducing apoptosis. Although Cisplatin has been known effective in killing cancer cells clinically, it can be hazardous to the kidneys, liver, brain, and heart. The use of higher doses and recurrent administration raises the risk of organ damage in a variety of organs. Cisplatin can generate reactive oxygen species (ROS), which can result in liver apoptosis. ROS are extremely reactive molecules that can activate superoxide radicals, hydroxyl radicals, and hydrogen peroxide, which can damage lipids, proteins, and DNA in the body. Cisplatin may induce lipid peroxidation, which may contribute to liver damage. Cisplatin use in clinical practice has been associated with an increase in serum aspartate aminotransferase (AST), alanine aminotransferase (ALT), alkaline phosphatase, and lactate dehydrogenase (LDH). The increase in serum indicators indicates the possibility of liver injury when Cisplatin is used [1], [2], [3], [4], [5].

Endogenous antioxidants such as superoxide dismutase (SOD), glutathione, and catalase play a critical role in neutralizing ROS generated by Cisplatin. When Cisplatin is used, an imbalance between endogenous antioxidants and ROS is created; when there is more ROS, the ROS are more capable of causing organ damage. As a result, when Cisplatin is used, extra supplements or chemicals that boost endogenous antioxidants are required. One method is to administer herbal treatment to individuals receiving Cisplatin. *Pometia pinnata* is a widely cultivated plant in Papua, Indonesia. The Papuan people have traditionally employed the bark, stems, fruit peels, fruits, and leaves of *P. pinnata* as medicine. However, research on *P. pinnata* is still in its infancy; few studies have been conducted on the *P. pinnata* plant. Numerous investigations have revealed that *P. pinnata* possesses a variety of pharmacological properties, including anti-diabetic, anti-inflammatory, and antihyperlipidemic properties. *P. pinnata* also includes flavonoids such