

Evaluation of Ethanol Extract of *Rhapidophora Pinnata* L.F Schott Leaves as Analgesic in Mice

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Keywords: Analgesic, *Rhapidophora pinnata*, Hot plate test.

Abstract: *Rhapidophora pinnata* (family Araceae) is a plant that have many benefit in pharmacology. The objective of this research was to explore the analgesic effect of ethanol extract of *Rhapidophora pinnata* leaves in mice. Hot plate test method was carried out using 25 mice to determine analgetic effect of *Rhapidophora pinnata* at various dose 50, 100 and 200 mg/kg bw/orally. Acetylsalicylate 200 mg/kg was used as a positive control. The result showed that all of ethanol extract of *Rhapidopora pinnata* significantly delayed the reaction ($p < 0.05$) compared to control group. It's concluded that *Rhapidophora pinnata* leaves possesses analgesic property.

1 INTRODUCTION

Pain is a reaction to an unexpected event when tissue harm and It relates to a sensational of physical or emotional discomfort. Pain management is one of the greatest medical priorities. Analgesics are medications that selectively alleviate disease by working on the central nervous system (CNS) (Vinayak et.al., 2013). The analgesic drug such as morphin or nonsteroidal anti-inflammatory drugs sometimes cause side effect like physical dependency, tolerance, addiction and gastrointestinal disorders if it used for long times. For that, the discovery of other drugs alternatives to treat pain is crucial

Rhapidophora pinnata, one of *araceae* family, has been used as a conservative drug for analgetic, cancer, rheumatism, and cough. Previous study showed that *Rhapidophora pinnata* have many biological activity like the therapy of bacterial infection, cytotoxic and antimutagenic (Masfria, 2015; Masfria et.al., 2017; Sumaiyah, et.al., 2018). The objective of this study was to explore the analgesic effect of ethanol extract of *Rhapidophora pinnata* leaves in mice.

2 MATERIAL AND METHOD

2.1 Preparation of The Extract

The *Rhapidophora pinnata* leaves extract was obtained from the percolation method using ethanol 96%. The percolat was evaporated by rotary to form a thickened extract.

2.2 Evaluation of Analgetic Activity

Analgesia effect produced by the extract was assessed by the hot plate test method in mice. Twenty five mice were grouped into five groups of five mice each. The first group as a negative control and received CMC-Na 0.5%, The second group was given Acetylsalicylate 200 mg/kg bw as a positive control. The third, fourth and fifth groups as treatment group, received ethanol extract of *Rhapidophora pinnata* at dose 50, 100 and 200 mg/kg bw orally, respectively. All of the animal take on a hot plate at a temperature of about $55 \pm 1^\circ\text{C}$. The time (second) is needed by the animal for giving the reaction such as licking the paw, leaping or going the limbs up whichever will be monitored first will be noted as the endpoint (reaction time).

Table 1: Reaction time of EERP and acetylsalicylate using hot plate test.

Group	Reaction time (s) ± SEM					
	10	20	30	40	50	60
CmC-Na 0.5%	9.97±0.61	11.72±2.26	16.79±2.32	14.97±1.96	12.78±2.07	8.36±3.08
EERP 50 mg/kg	15.5±5.55	20.08±3.58	22.47±5.29	22.36±6.25	14.5±5.49	11.06±5.09
EERP 100 mg/kg	14.84±3.18	19.59±4.59	23.12±2.37	19.74±5.80	16.29±4.79	9.74±2.72
EERP 200 mg/kg	18.29±6.06	24.41±3.16	22.97±4.06	18.88±2.61	10.76±3.57	8.02±2.55
Acetylsalicylate	12.71±1.72	20.47±1.07	23.6±0.96	17.58±1.88	14.32±3.31	12.48±1.80

Note :

EERP = Ethanol extract of *Rhaphidophora pinnata*

*Significant difference against control (P<0.05)

Reaction time every 10 minutes will be recorded until at 60 minute after the drug administration (Vinayak et.al., 2013; Umamageswari, et.al., 2015; Jia-Cheng Liao et.al., 2016).

2.3 Statistical Analysis

All data were evaluated using one way ANOVA and Turkey multiple comparison test with $P < 0.05$ was considered as significant.

3 RESULT

Analgesic activity of *Rhaphidophora pinnata* was evaluated by hot plate test method with the reaction time as the benchmark for the assessment of analgesic work. Based on the study, there was valuable difference within groups has been researched in reaction time of the control group. Analgetic activity of Acetylsalicylate 200 mg/kg showed a valuable difference (P<0.05) against control (Table 1).

The result from hot plate test showed the analgesic work of *Rhaphidophora pinnata*. Previous study showed that the herbal drugs having analgesic effect if they have the chemical constituents like glycosides, alkaloids, flavonoids, saponins, tannins, terpenoids (Chowdhury et.al., 2017). Based on the screening phytochemical, *Rhaphidophora pinnata* leaves contains various plant components like alkaloids, glycosides, flavonoids and tannin. So it may be considered that these plant components of the *Rhaphidophora* may be a drug candidate for its analgesic work. Further studies are needed to know the mechanism of action and actual chemical components that are liable for analgesic effect.

4 CONCLUSION

Based on the study, it can be concluded that *Rhaphidophora pinnata* possesses analgesic property

ACKNOWLEDGEMENT

This study was funded by Talenta 2018.

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