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EFFECT OF RED GUAVA (*Psidium guajava L.*) LEAVES EXTRACT ON PARACETAMOL ANALGESIC ACTIVITY IN MALE WHITE MUSCULES (*Mus musculus*)

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Abstract

Many people have the opinion that the use of herbal medicines that are used together with chemical drugs is considered safe and does not cause side effects that are harmful to health. In general, all diseases can cause pain. The state of pain is a sensory and emotional event that is uncomfortable to feel due to tissue damage. Plants from nature that are often used for analgesic therapy are guava plants, tropical plants from the Myrtaceae family. This study aimed to determine the activity of red guava leaf extract (Psidium guajava L.) and its combination against paracetamol tablet analgesics in white male mice (Mus musculus). This research method is an in vivo experimental method which consists of making red guava leaf simplicia, red guava leaf extraction, phytochemical screening, and analgesic activity test. The results of this study were red guava leaf extract with a dose of 200 mg/kgBW was able to provide a pain barrier of 49.59% and red guava leaf extract combined with paracetamol at a dose of 65 mg/kgBW gave a pain barrier of 76.42%.

Keywords: Red guava, Leaves, Paracetamol, Analgesic

1. Introduction

WHO (World Health Organization) defines herbs as plants with structures of flowers, leaves, fruit, wood, stems, bark, roots, rhizomes or other plant parts that can be used as an effort in treatment. Most people have the opinion that the use of chemical and herbal medicines simultaneously is considered safe and does not have side effects that are harmful to health. Until now, the news that natural ingredients from nature are safe and always gets various promotions from various promoters, because the use of these natural ingredients has long been used as traditional herbal medicine. Plants from nature that are commonly used for analgesic therapy are guava plants, tropical plants from the Myrtaceae family because they are proven to contain several main compounds such as saponins, tannins, and flavonoids as well as proven from traditional uses that have been carried out using guava leaves for external use. used as the treatment of accidental wounds and bleeding caused by sharp objects.

Several studies on the use of guava leaf extract (Psidium guajava L.) as traditional medicine, one of which was conducted by Livingston Raja and Sundar in 2016, that giving guava leaf extract at doses of 100 mg/kgBW and 200 mg/kgBW in mice can provide analgesic effect through central and peripheral mechanisms.

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2. Method

The method used is an in vivo experimental method using male white mice (Mus musculus) as test animals.

3. Result and Discussion

3.1 Phytochemical Screening

In the manufacture of red guava leaf extract, the extract yield was 15.4%. Then do the test phytochemical, in the alkaloid test using three reagents, namely Mayer a white precipitate formed, Dragendorff formed a red orange or yellow precipitate, Wagner formed a brown precipitate which means it was positive for alkaloids. The flavonoid test formed a red or yellow-orange color when Mg powder was given and dropped with concentrated HCl. The saponin test will produce froth if it is shaken quickly and dripped with 2N HCL. The triterpenoid test will form a red orange or purple color to indicate the sample contains triterpenoids. Tannin test using FeCl3 will produce a black or bluish black color.

3.2 Averange Decrease in Writhing After Treatment

At K(-) administration of Na.CMC showed a very slight decrease in the volume of the writhing response because Na.CMC is a suspending agent and has no analgesic effect. In K1 administration of paracetamol at a dose of 65 mg/kgBW showed a decrease in response from the 25th to 60th minutes with a decrease in stretching of 3.4 and 0.4. This is because paracetamol works to inhibit the synthesis of prostaglandins and cyclooxygenase enzymes to form pain which is transmitted through the descending serotonic system**.** In K2 administration of red guava leaf extract at a dose of 200 mg/kgBW gave a response to decrease stretching which was not much different from paracetamol. This is because flavonoid compounds can inhibit the performance of the cyclooxygenase enzyme in the body and reduce the production of prostaglandins & reduce pain. In K3 the combination of extract + paracetamol gave a rapid response to decrease in stretching because the two test substances used were proven to have analgesic abilities that were able to inhibit the production of prostaglandins in the body.

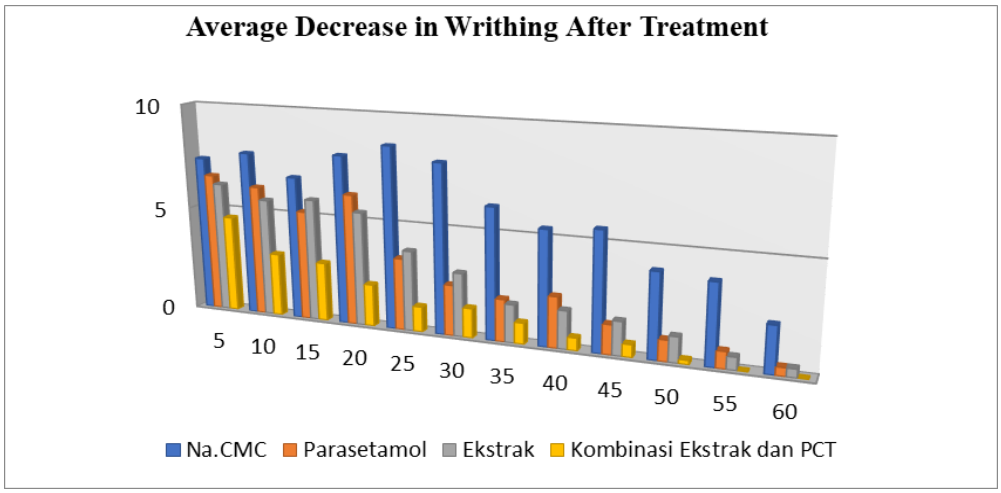

Figure 1 : Average Decrease in Writhing After Treatment

The graph under shows that each treatment group shows the percentage of analgesic protection of the test substance that is different for each treatment of the test substance. The highest average percentage in the combination treatment is a combination of red guava leaf extract and paracetamol of 76.42% this occurs because of the combination of high analgesic effectiveness, the second highest average percentage of protection is the red guava leaf extract treatment group of 49, 59% of this is due to the presence of flavonoids that function as analgesics which have a working mechanism by inhibiting the performance of the cyclooxygenase enzyme in the body, so that it can reduce the production of prostaglandins by arachidonic acid and can reduce pain, and has

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also been proven by previous research conducted by Livingston Raja & Sundar in 2016 that guava leaf extract provided an analgesic effect at doses of 100 mg/kgBW and 200 mg/kgBW in mice, then the average percentage in the paracetamol treatment was not too far from the extract percentage. red guava leaves, which is 46.08%, this is then probably because the half-life required by paracetamol is 1-3 hours.

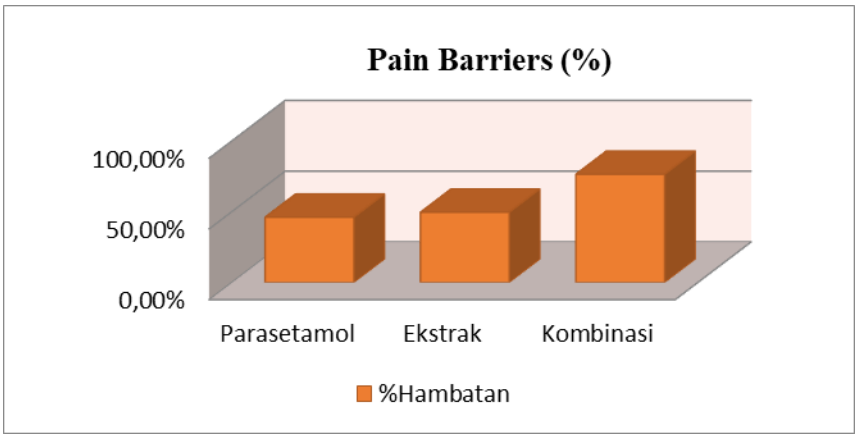

Figure 2 : Pain Barriers (%)

3.3 Statistical Program for Social Science Testing

Normality test (Table 1)

Sign. Value			
Na.CMC	**Paracetamol**	**Extract**	**Combination**
0,366	0,087	0,098	0,133

Testing for normality using SPSS (*Statistical Program for Social Science*), obtained normality data on the number of mice wriggling with Na.CMC test solution with a value of 0.336, paracetamol test solution with a value of 0.087 red guava leaf extract test solution with a value of 0.098, and a combination test solution for extracts red guava leaves with paracetamol with a value of 0.133. If the significance value is greater than 0.05, then the data is normally distributed. From the results of the attached data, all data are normally distributed.

Homogenity test (Table 2)

	Pengujian	**Sig.**
Jumlah Geliat	*Based on Mean*	0,135
	Based on Median	0,336
	Based on Median And With Adjusted Df	0,337
	Based on Trimmed Mean	0,133

From the normality data that has been obtained, it is proven that the data obtained are normally distributed in which the value obtained is greater than 0.05, then proceed with the homogeneity test of the stretching variant in

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mice. Based on the results of the data that has been processed, the average value of the highest sign of the entire treatment is 0.135, the mean of the highest sign for the whole treatment is 0.336, the mean value based on the highest degree of freedom of the sign is 0.337, and the average trimmed by the highest sign is obtained. a value of 0.133. Data is called homogeneous if it is greater than 0.05.

ANOVA test (Table 3)

	Test	**Sig.**
Number Of Writing	Group mean difference	0,000

Based on the results of the one-way statistical test that has been obtained, the results of the data are continued with the ANOVA test which if the significance value (p-value) is 0.000, which means 0.05 indicates that there is a difference in the average value between the treatment groups.

Post Hoc Duncan test (Table 4)

	Test	**1**	**2**
Number of Writing	Na.CMC	30,7500	
	Paracetamol		15,8333
	Extract		15.5000
	Combination		7,2500

From the results of the ANOVA which showed that there was a difference in the average value, then the post hoc Duncan test was carried out to see the difference. In this test look at the comparison between each treatment group. It can be seen from the table below that the value of the negative group for the Na.CMC treatment is far compared to the positive control group where the average value is 30,7500, while the positive control group for paracetamol has a value of 15,8333 and the extract is 15,5000 which is the effectiveness of paracetamol. and extracts both have analgesic ability to reduce the writhing response. While the combination group between red guava leaf extract and paracetamol had an average value of 7.2500, which means that in this group the analgesic power provided by the combination of these substances has a high effectiveness in reducing the number of stretches in mice.

4. Conclusion

From the research that has been completed, it can be concluded that the administration of red guava leaf extract at a dose of 200 mg/kgBW can reduce the writhing response in mice with a percentage of pain inhibition of 49.59% and red guava leaf extract combined with paracetamol at a dose of 65 mg. /kgBW is able to increase the effect of decreasing the wriggling response quickly with the percentage of pain inhibition of 76.42%.

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