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Antipyretic Activity of Spare Leaf Extract (Erythrina subumbrans (Hassk.) Merr.) on Pepton-Induced Male White Rats (Rattus norvegicus)

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Abstract: Fever is a common physiological response of the body to infection, inflammation, or other pathological conditions and is characterized by an increase in body temperature above the normal range. Although antipyretic drugs such as paracetamol are widely used to reduce fever, the exploration of medicinal plants as alternative natural antipyretic agents remains important. Dadap serep leaves (*Erythrina subumbrans* (Hassk.) Merr.) are known to contain bioactive compounds such as flavonoids, saponins, tannins, alkaloids, and polyphenols, which are potentially associated with antipyretic and anti-inflammatory activity. **Objective:** This study aimed to evaluate the antipyretic activity of dadap serep leaf extract in peptone-induced male white rats (*Rattus norvegicus*) and to determine the most effective dose among 100, 200, and 400 mg/kgBW. **Methods:** This research was a laboratory experimental study using a pre-test and post-test control group design. A total of 30 male white rats were divided into five groups: negative control receiving 1% Na-CMC, positive control receiving paracetamol, and three treatment groups receiving dadap serep leaf extract at doses of 100, 200, and 400 mg/kgBW. Fever was induced by subcutaneous injection of 5% peptone, and rectal body temperature was measured at several observation times after treatment. Data were analyzed using One-Way ANOVA followed by the Tukey HSD post hoc test. **Findings:** The results showed that dadap serep leaf extract reduced rectal body temperature in peptone-induced rats. The strongest antipyretic effect was observed at a dose of 400 mg/kgBW, indicating that higher extract doses may produce a greater reduction in fever temperature. **Implications:** These findings indicate that dadap serep leaf extract has potential as a natural antipyretic agent and may support the development of plant-based fever management. The results may also provide a scientific basis for the traditional use of dadap serep leaves in reducing fever. **Originality:** The originality of this study lies in providing experimental evidence on the dose-dependent antipyretic effect of *Erythrina subumbrans* leaf extract in a peptone-induced fever model of male white rats.

Keywords: antipyretic; *Erythrina subumbrans*; fever; peptone induction; *Rattus norvegicus*.

INTRODUCTION

Fever or pyrexia is a common health condition characterized by an increase in body temperature above the normal physiological range. Fever is generally understood as part of the body's defense mechanism against infection, inflammation, or other pathological conditions. From a pathophysiological perspective, fever occurs when pyrogenic stimuli activate

inflammatory mediators that influence the hypothalamic thermoregulatory center, resulting in an increase in the body temperature set point (Walter et al., 2016). However, when fever is not properly managed, it may cause discomfort and physiological disturbances, including dehydration, electrolyte imbalance, headache, fatigue, joint pain, nausea, vomiting, drowsiness, and anxiety. In more severe conditions, excessive elevation of body temperature may cause tissue injury, especially in brain and muscle tissue, and may increase the risk of seizures as a serious complication (Taribuka et al., 2020; Walter et al., 2016).

In public health practice, fever remains an important concern because it is one of the most common symptoms experienced by the community and often becomes a reason for seeking medical treatment (Barbi et al., 2017; Sullivan & Farrar, 2011). Fever is also one of the most frequent clinical problems in children and is a common cause of parental concern and healthcare visits. Fever may occur due to infectious and non-infectious causes, with infectious fever commonly related to microorganisms entering the body through food, air, or direct contact, while non-infectious fever may be associated with congenital disorders or inflammatory conditions (Amelia, 2022). In Indonesia, fever cases are estimated to reach approximately 350–810 cases per 1,000 population per year, or around 600,000–1.5 million cases annually, with 80–90% of cases occurring among children aged 2–19 years (Langingi et al., 2020). These data indicate that fever management is not only a clinical issue but also a public health concern that requires safe, accessible, and effective treatment alternatives.

Previous studies on fever management can be grouped into several categories. The first category discusses fever as a clinical and physiological response. Fever is closely related to the regulation of body temperature by the central nervous system, especially the hypothalamus, which controls immunological, endocrine, neurological, and behavioral responses during fever (Purwasih et al., 2023). Although fever can support immune defense, excessive fever may lead to various complications and therefore requires appropriate management (Taribuka et al., 2020). Studies in this category emphasize that fever should not only be understood as an increase in body temperature, but also as a complex physiological response involving inflammatory mediators and thermoregulatory mechanisms.

The second category focuses on conventional antipyretic therapy. Antipyretic drugs are commonly used to reduce fever by influencing the hypothalamic temperature regulation center and inhibiting prostaglandin synthesis through the cyclooxygenase pathway (Purwasih et al., 2023). Paracetamol or acetaminophen is one of the most widely used antipyretic and analgesic drugs because it can inhibit prostaglandin formation, especially in the central nervous system

(Nurfadhila et al., 2023; Patala & Awilia, 2023). However, inappropriate use of antipyretic drugs, including nonsteroidal anti-inflammatory drugs, may cause adverse effects such as gastric irritation, allergic reactions, hepatotoxicity, and liver disorders when used in high doses or for a long duration (Purwasih et al., 2023). Therefore, research on alternative antipyretic agents from natural materials remains important.

The third category examines medicinal plants with potential antipyretic, analgesic, and anti-inflammatory activity. Several plant-based studies have shown that secondary metabolite compounds such as flavonoids, alkaloids, saponins, tannins, and steroids may contribute to antipyretic mechanisms by reducing inflammatory responses and inhibiting prostaglandin formation (Amelia, 2022; Purwasih et al., 2023). Dadap serep leaves, or Erythrina subumbrans (Hassk.) Merr., are traditionally used in the community to help relieve fever, especially in children (Pariata & Suta, 2022). Previous research also reported that 70% ethanol extract of dadap serep leaves had analgesic activity in male mice, although its effect was still lower than the positive control (Rangkuti, 2023). More recent findings have also explored dadap serep leaf extract in antipyretic patch preparations (Priolaningsih et al., 2025). However, studies specifically evaluating the antipyretic activity of dadap serep leaf extract in peptone-induced male white rats remain limited, particularly studies comparing several extract doses with paracetamol as a positive control.

Based on this research gap, this study aimed to evaluate the antipyretic activity of dadap serep leaf extract (Erythrina subumbrans (Hassk.) Merr.) in male white rats (Rattus norvegicus) induced with peptone. This study compared the effects of dadap serep leaf extract at doses of 100, 200, and 400 mg/kg body weight with a negative control and paracetamol as a positive control. Through this experimental design, the study is expected to provide scientific evidence regarding the potential use of dadap serep leaf extract as a natural antipyretic agent and to support the pharmacological basis of its traditional use in fever management.

The main argument of this study is that dadap serep leaf extract has potential antipyretic activity because it contains bioactive secondary metabolites that may influence inflammatory and thermoregulatory pathways. Compounds such as flavonoids, alkaloids, saponins, tannins, and steroids are assumed to contribute to fever reduction by inhibiting prostaglandin synthesis, suppressing inflammatory mediators, and regulating the hypothalamic temperature set point (Priolaningsih et al., 2025; Purwasih et al., 2023). Therefore, the hypothesis of this study is that dadap serep leaf extract can reduce rectal temperature in peptone-induced male white rats, and that higher extract doses will produce a stronger antipyretic effect than lower doses.

RESEARCH METHOD

The unit of analysis in this study was male white rats (*Rattus norvegicus*) induced with peptone to produce a fever model. The main object observed was the change in rectal body temperature of rats before induction, after peptone induction, and after administration of dadap serep leaf extract (*Erythrina subumbrans* (Hassk.) Merr.). The antipyretic activity was assessed by comparing the decrease in body temperature among treatment groups, including the negative control group, positive control group, and dadap serep leaf extract groups at doses of 100, 200, and 400 mg/kg body weight.

This study used a quantitative laboratory experimental design with a pre-test and post-test control group approach. This design was chosen because the study aimed to determine the effect of dadap serep leaf extract on reducing fever in experimental animals under controlled laboratory conditions. The pre-test and post-test approach allowed the researchers to observe changes in body temperature before and after treatment, while the control groups were used to compare the effect of the extract with untreated conditions and standard antipyretic treatment. Therefore, this design was appropriate for evaluating the antipyretic activity of dadap serep leaf extract in a peptone-induced fever model.

The data source in this study was primary data obtained directly from rectal temperature measurements of male white rats during the experiment. The sample consisted of 30 male white rats selected based on predetermined criteria and randomly assigned to treatment groups using a simple random sampling technique. The sample size was calculated using the Federer formula, with a minimum of five rats required in each group. To anticipate possible dropouts during the experiment, an additional 20% of the minimum sample size was added, resulting in a total of 30 experimental animals.

Data were collected by measuring the rectal temperature of each rat using a digital thermometer. Temperature measurements were carried out before peptone induction as the normal baseline temperature, after approximately two hours of peptone induction to confirm the fever condition, and after treatment at 30, 60, 90, and 120 minutes. The treatment groups consisted of a negative control group, a positive control group receiving paracetamol, and three groups receiving dadap serep leaf extract at doses of 100, 200, and 400 mg/kg body weight. The repeated temperature measurements were used to evaluate the pattern and magnitude of the antipyretic effect in each group.

The data were analyzed statistically to determine whether there were significant differences in body temperature among treatment groups and observation times. The normality of the data

was tested using the Shapiro-Wilk test, while homogeneity was assessed before conducting further analysis. If the data were normally distributed, the Repeated Measures ANOVA test was used to analyze differences in temperature changes over time, followed by the Tukey HSD post hoc test when significant differences were found. If the data were not normally distributed, the Kruskal-Wallis test was used as a non-parametric alternative. The level of significance was set at $\alpha = 0.05$, and the results were considered statistically significant when the p-value was less than 0.05.

RESULT

Phytochemical Test Results

Phytochemical test is a qualitative test that aims to determine the content of secondary metabolite compounds in the simplicia of the leaves of the simplia. The results of the phyomia simplicia and leaf extract test can be seen in the following table:

Table 1. Phytochemical Test Results

Senyawa	Description
Alkaloid	+
Steroid	+
Flavonoid	+
Saponin	+
Tanin	+

Description:

(+) Contains Compound Groups

Antipyretic Activity Test Results of Backup Leaf Extract

The condition of fever in mice was determined by measuring the temperature through the rectal using a digital thermometer. The data of this research is primary data. Testing of the antipyretic effect of dadap leaves in male white rats before and after treatment can be seen in the following table:

Table 2. Average body temperature ºC of mice before and after treatment

Groups	**Average body temperature of rats ºC**					
	A0	**A1**	**A30**	**A60**	**A90**	**A120**
Negatives	36.68	37.86	37.76	37.58	37.58	37.52
Positive	36.06	38.20	38.14	37.80	37.74	37.18
Servings 100	36.44	38.66	38.54	38.24	38.12	36.64
Servings 200	37.02	38.14	38.22	38.04	37.84	36.32
Servings 400	36.44	37.90	37.70	37.40	36.94	35.84

Description:

A0 = Normal temperature of rats before induction

A1 = Rats' body temperature after ± 2 hours of peptone induction

A30 = Time Interval 30 minutes

A60 = Time Interval 60 minutes

A90 = Time Interval 90 minutes

A120 = Time Interval 120 minutes

From the table of average body temperature before and after treatment, a graph was then made to illustrate the average rectal temperature measurement of rats before and after treatment in each group. The graph can be seen in the image:

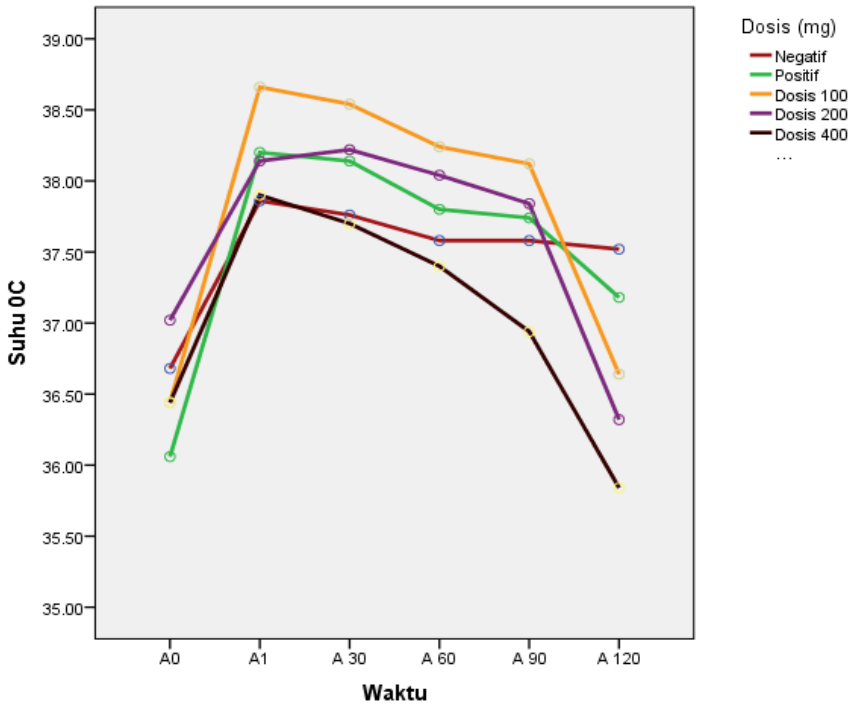

Figure 1. Mean rectal temperature changes in peptone-induced male white rats after treatment with dadap serep leaf extract at various doses.

Figure 1 of the observation curve of the body temperature of the rats before, after being induced with pepton and after being treated in each group.

Description:

A0 = Body temperature before being given pepton

A1 = Body temperature after being given pepton

A30 = Time to observe the body temperature of the rats 30 minutes after the preparation test

A60 = Observation time of rat body temperature 60 minutes after the preparation test

A90 = Observation time of rat body temperature 90 minutes after the preparation test

A120= Observation time of rat body temperature 120 minutes after the preparation test

1. Negative Control

The negative control group showed an increase in body temperature at A1 after fever induction with an average of 37.86. Furthermore, body temperature was relatively stable until the end of observation with minimal decrease. This indicates that without the administration of active substances, the rat's body is not able to lower the temperature optimally.

2. Positive Control

In the positive control group, there was an increase in temperature in A1 with an average of 38.20, followed by a gradual decrease in body temperature from A30 to A120 with an average of 37.18. This pattern suggests that the comparator drug has an antipyretic effect that is able to lower body temperature after the induction of fever.

3. Treatment Dosage 100 mg

The 100 mg dose group experienced an increase in temperature at A1 with an average of 38.66, then a slow decrease in temperature at the next observation time until the 120th minute with an average of 36.64. However, the temperature decrease that occurred was still relatively limited compared to higher doses, so the antipyretic effect was relatively mild.

4. Treatment Dosage 200 mg

At the 200 mg dose, there was an increase in temperature at A1 with an average of 38.14, a more pronounced decrease in body temperature was seen compared to the 100 mg dose. Body temperature began to decrease from A30 and continued to decrease until A120 with an average of 36.32 indicating that the increased dose provides a more effective antipyretic effect.

5. Treatment Dosage 400 mg

The 400 mg dose group showed the greatest and fastest drop in body temperature. After the peak temperature at A1 with an average of 37.90 there was a significant decrease to A120 with an average of 35.84. This indicates that the 400 mg dose was the dose with the highest antipyretic effectiveness among all treatment groups.

Normality Test and Homogeneity Test Results

The Anova test is used to see whether or not there is a difference in the administration of the drug in each treatment. Before the anova test is carried out, the existing data is tested for normality.

The results of the Shapiro-wilk normality test showed that the negative treatment group had a significant value of 0.835 > 0.05, the positive group of p values obtained was 0.228 > 0.05. Furthermore, for the 100 mg/BB dose group of male white rats, the p-value obtained was 0.069 > 0.05. The 200 mg/BB dose group of male white rats obtained a p value of 0.972 > 0.05 and for the 400 mg/BB dose group of male white rats a significant value obtained of 0.899 > 0.05. With the results of the significant value obtained, all treatment groups were declared to have a normal distribution of data because the P value > 0.05.

The results of the homogeneity test where the homogeneity test results for each have a p> value of 0.05 so that all data from each treatment have homogeneous results.

Anova Test Results

Table 3. Anova Test Results

Treatment Groups	Mean ± SD	P
Negatives	37.50 ± 0.07	0.00 < 0.05
Positive	37.52 ± 0.08	
Servings 100	37.77 ± 0.09	
Servings 200	37.60 ± 0.07	
Servings 400	37.04 ± 0.10	

In the table, you can see the results of the anova test from each treatment. Where the significant value obtained is p = 0.00 < 0.05, this indicates that there are significant differences from each treatment group.

Tukey HSD Post Hoc Test Results

Table 4. Post Hoc Results of Tukey HSD Between Time Groups

Treatment Groups	A0 / A1	A1 / A30	A1 / A60	A1 / A90	A1 / A120
Negatives					
Significant Value	0.126	1.000	0.988	0.988	0.972
Posiive					
Significant Value	0.000*	1.000	0.815	0.714	0.044*

Servings 100					
Significant Value	0.000*	1.000	0.872	0.711	0.000*
Servings 200					
Significant Value	0.029*	1.000	1.000	0.944	0.000*
Servings 400					
Significant Value	0.00*	0.78	0.03*	0.00*	0.00*

Description:

*= Significantly different meanings

A0 = Body temperature before being given pepton

A1 = Body temperature after being given pepton

A30 = Time to observe the body temperature of the rats 30 minutes after the preparation test

A60 = Observation time of rat body temperature 60 minutes after the preparation test

A90 = Observation time of rat body temperature 90 minutes after the preparation test

A120 = Observation time of rat body temperature 120 minutes after the preparation test

Table 4 is the result of a post hoc test in which there is a significant difference between the average time group. In this case, it can be said to be significant if the p value < 0.05. In the table, it can be seen that to see the difference in average time, the researcher compared the time before the administration of pepton and after the administration of pepton. Then it was followed by comparing the values when the rats were given pepton and minutes after being given dadap leaf extract.

Table 5. Post-Hoc Test Tukey HSD Between Treatment Groups

Treatment Groups	**Groups**	**p**	**Description**
Negatives	Positive	0.05	Significant
	Servings 100	0.74	Insignificant
	Servings 200	0.08	Insignificant
	Servings 400	0.00	Significant

From table 5 in the post hoc tukey test between the data treatment groups, it can be said that it is significant if the p value < 0.05. The goal is to find out which groups are significantly different.

DISCUSSION

The results showed that the leaf extract of dadap serep (Erythrina subumbrans (Hassk.)) had antipyretic activity in pepton-induced male white rats. It is supported by the results of phytochemical tests that the leaves of the Dadap Backup are positive and contain alkaloid compounds, steroids, flavonoids, and saponins. Alkaloids have an antipyretic mechanism related to their ability to inhibit the synthesis of prostaglandins in the central nervous system, specifically in the hypothalamus which plays a role in regulating body temperature. The decrease in prostaglandin production causes a decrease in the set point of body temperature, so it can reduce fever.

Steroids work by inhibiting the release of inflammatory mediators, such as proinflammatory cytokines and prostaglandins, which contribute to an increase in body temperature in the event of infection or inflammation by suppressing those inflammatory responses, thereby helping to lower fever and stabilize body temperature. Flavonoids can lower fever because they inhibit the main enzyme in prostaglandin biosynthesis, namely the enzyme syokisigenase, a decrease in prostaglandin levels will affect the temperature regulating center in the hypothalamus, thus contributing to a decrease in body temperature in fever conditions (Priolaningsih et al., 2025). In contrast to previous studies, ethanol extract of 70% of dadap leaves has activity as an analgetic against male white mice of the DDY strain. The optimal dose of 70% ethanol extract of dadap leaves that provides analgesic activity is at a dose of 22.4 mg/20 gBB of mice. The positive control analgetic activity is still greater than the dose of 70% ethanol extract of dadap leaves (Rangkuti, 2023). While saponins are in antipyretic activity through their ability to modulate immune and inflammatory responses. This compound can reduce the release of inflammatory mediators that trigger an increase in body temperature. While saponins are also considered to contribute to antipyretic activity through modulation of inflammatory responses, this effect may be related to the ability of secondary metabolites to reduce inflammatory mediators involved in fever regulation (Amelia, 2022; Purwasih et al., 2023).

Based on the results of the measurement of the average rectal temperature of rats in 5 groups of mice before being induced with pepton, 5% ranged from 36.06°C to 37.02°C. Subcutaneous injection of 5% peptone caused fever with an average temperature value ranging from 37.90°C to 38.86°C, in contrast to previous studies found temperatures ranging from 37.44°C - 39.42°C in the 10% pepton-induced test animal group.7 In this study, it was known that the temperature of the test animals in 5 groups increased more than or equal to 0.60C which can be categorized as fever (Widyasari & Ratiningsih, 2017). After the temperature rise

occurred, a test substance was given to each treatment group, then repeated measurements were taken for 120 minutes with an interval of 30 minutes.

The results of the HSD tukey post hoc test between time groups, in negative control there was no significant difference in body temperature between A1 and A30, A60, A90, and A120 ($p > 0.05$). In positive controls, significant temperature differences occurred between A0 and A1 as well as between A1 and A120 ($p < 0.05$), whereas A1 with A30, A60, and A90 was not significant. At a dose of 100 mg/kgBB and a dose of 200 mg/kgBB, a significant temperature difference was found in the ratio of A0 to A1 and A1 to A120 ($p < 0.05$), while the ratio of A1 to A30, A60, and A90 was not significant. At a dose of 400 mg/kgBB, significant temperature differences occurred between A0 and A1, as well as between A1 and A60, A90, and A120 ($p < 0.05$), while A1 and A30 were not significant.

The results of the HSD tukey post hoc test between treatment groups where the negative group is the control group or the comparison group. So the result obtained is that when the negative group is a comparison of the positive group, the significant value obtained is $0.05 \leq 0.05$ so that it is said to be significantly different. When the negative group as a control group against the treatment group of 100 mg/kgBB dose, the significant value obtained was $0.74 > 0.05$ so that it was declared insignificant. When the negative group is a comparison group against the 200 mg/kgBB group, the significant value obtained is $0.08 > 0.05$, this indicates that the data is not significant. Then when the negative group is a comparison group to the 400 mg/kgBB dose group, the significant value obtained is $0.00 < 0.05$, this states that the 400 mg/kgBB dose group has a significant value.

The 1% Na-CMC group as a negative control based on the results of statistical tests there was no significant difference between the time of the decrease in body temperature of the rats at the 30th, 60th, 90th minute but at the 120th minute there was a decrease in temperature but still relatively constant in the state of fever in contrast to other groups, this is because Na-CMC is a carrier so it has no effect on pain inhibition (Sani et al., 2022). The administration of paracetamol as a positive control obtained a gradual decrease in body temperature in white rats until the 120th minute until it reached a temperature of 37.18°C. Paracetamol works by inhibiting the enzyme cyclooxygenase (COX), especially COX-2. This enzyme is responsible for the formation of prostaglandins from arachidonic acid. A decrease in prostaglandin levels in the hypothalamus will lead to peripheral vasodilation and increased heat loss so that body temperature decreases. Paracetamol has antipyretic and analgesic effects, but is very weak in anti-inflammatory (Patala & Awilia, 2023). Paracetamol was used as a comparison material so

that it became a benchmark for the presence or absence of antipyretic effects from each treatment group in this study. This is why dadap leaf extract is more effective in lowering fever temperature compared to giving paracetamol.

In the dose group of 100 mg/kgBB of rat grams and a dose of 200 mg/kgBB of rat grams at the 30th, 60th, and 90th minutes, the body temperature of male white rats experienced a gradual decrease in temperature until there was a significant decrease in temperature at 120 minutes. However, when the post hoc analysis test tukey dose 100 and dose 200 mg/kgBB did not produce significant values with the negative group as the comparison group. This may be because although the average temperature drop at doses of 100 mg/kgBB and 200mg/kgBB appears to be larger numerically, Anova's results suggest that the differences are not statistically strong enough to state that the effects are completely different from each other or more than from other control treatments. Meanwhile, positive treatment (paracetamol administration) has a very clear and consistent difference so that it is considered statistically significant. Another cause that can produce a more significant positive group than the 100 mg and 200 mg doses is paracetamol as a substance that is known to have a stable heat-reducing effect, so the variation in temperature data obtained is smaller and the differences with other groups are very clear making the results more significant.

At a dose of 400 mg/kgBB, male white rats experienced a significant decrease in temperature at the 60th minute with a significant value of 0.03. and continued to experience a significant temperature drop at 120 minutes until it reached an average temperature of 35.84 °C, the temperature drop that occurred until it reached hypothermia was caused by the biological conditions of the test animals, environmental temperature and psychological stress factors of the test animals due to repeated temperature measurements (Mochtar et al., 2023). The normal temperature range for white rats is between 35.9°C to 37.5°C (Alim et al., 2023).

The test results showed that the dose of 400 mg/kgBB in rats was the dose that had the most significant effect. This is suspected because at that dose the levels of the active compound in the body are sufficient to produce a stronger antipyretic effect compared to paracetamol used as a comparator. Thus, it can be interpreted that the dose of paracetamol given to test animals has not been able to cause optimal antipyretic effects.

In contrast, doses of 100 mg/kgBB and 200 mg/kgBB showed no meaningful antipyretic activity, which is likely due to the still too low dose. However, in the administration of a dose of 400 mg/kgBB, there was a significant decrease in body temperature in the 60th, 90th, to 120th minute after treatment.

This effect is related to the content of active compounds in the leaves of dadap spare, including alkaloids, flavonoids, tannins, and saponins, which are known to have antipyretic, anti-inflammatory, and analgesic activities. This is different from paracetamol which contains only one active substance, namely acetaminophen (De Martino & Chiarugi, 2015). The presence of various active compounds in dadap spare leaf extract is thought to work synergistically, resulting in a stronger effect than the effects of each compound separately.

In addition to playing a role in inhibiting the formation of prostaglandins, dadap leaf extract is also suspected to be able to suppress the release of pro-inflammatory cytokines that trigger an increase in body temperature, as well as modulate the immune system to reduce the inflammatory response as the cause of fever. This broader mechanism of action allows dadap leaf extract to not only reduce fever, but also address the cause of the fever (Pariata & Suta, 2022).

CONCLUSION

The findings of this study indicate that dadap serep leaf extract (Erythrina subumbrans (Hassk.) Merr.) has antipyretic activity in peptone-induced male white rats (Rattus norvegicus). The extract was able to reduce rectal body temperature after fever induction, with the most significant effect observed at a dose of 400 mg/kgBW. This result suggests that dadap serep leaf extract may have potential as a natural antipyretic agent, supported by the presence of bioactive compounds such as flavonoids, alkaloids, saponins, tannins, and steroids.

The scientific contribution of this study lies in providing experimental evidence regarding the antipyretic potential of dadap serep leaf extract in an animal fever model. This study supports the traditional use of dadap serep leaves for fever management and adds pharmacological data on the activity of Erythrina subumbrans as a medicinal plant. The use of different extract doses also provides preliminary information on the dose-response pattern, in which the 400 mg/kgBW dose showed the strongest antipyretic effect compared with lower doses.

However, this study has several limitations. The research only measured changes in rectal body temperature and did not examine specific biological markers such as prostaglandin levels, cyclooxygenase activity, inflammatory cytokines, or toxicity parameters. In addition, the safety profile and optimal therapeutic dose of dadap serep leaf extract have not been fully established. Therefore, further studies are needed to evaluate the mechanism of action, acute and subchronic toxicity, phytochemical quantification, and the safety of dadap serep leaf extract before it can be developed as an antipyretic herbal preparation.

REFERENCES

Alim, N., Hasanuddin, R., Jasmiadi, J., Musdalifah, M., Hagg, A. I., & Linda, N. (2023). Antipyretic activity of ethanol extract from beligo (Benincasa hispida (Thunb.) Cogn.) fruit flesh in Wistar albino rats (Rattus norvegicus). *Jurnal Ilmiah Sains*, *23*(2), 89-98. https://doi.org/10.35799/jis.v23i2.48443

Amelia, E. K. (2022). Review Artikel: Tanaman Obat yang Memiliki Aktivitas Antipiretik Secara in Vivo. *Jurnal Farmasetis*, *11*(1), 67-76.

Barbi, E., Marzuillo, P., Neri, E., Naviglio, S., & Krauss, B. S. (2017). Fever in Children: Pearls and Pitfalls. *Children*, *4*(9), 81. https://doi.org/10.3390/children4090081

De Martino, M., & Chiarugi, A. (2015). Recent advances in pediatric use of oral paracetamol in fever and pain management. *Pain and Therapy*, *4*(2), 149-168. https://doi.org/10.1007/s40122-015-0040-z PMID - 26518691

Langingi, A. R., Akbar, H., & Kaseger, H. (2020). Pengaruh Penyuluhan Kesehatan Terhadap Tingkat Pengetahuan Ibu dalam Menangani Demam pada Anak di Desa Moyag Todulan. *Graha Medika*, *3*(1), 1-9.

Mochtar, C. F., Aisyiyah, N. M., Husna, Q. a. A., Hamzah, H., Bakhtiar, M. I., Devi, R. S., Varizza, F. P., Faradillah, A., Hafidzah, E., Suriati, S., & Damis, N. L. (2023). Antipyretic and antiinflammatory activities of bopot leaf extract from Kutai Kartanegara District. *Indonesian Journal of Pharmaceutical Science and Technology*, *Suppl. 5*(1), 80-89. https://doi.org/10.24198/ijpst.v0i0.46188

Nurfadhila, L., Rahmawati, M., Fitri, N. K., Nibullah, S. G., & Windari, W. (2023). Analisis senyawa acetaminophen dalam sampel biologis dengan berbagai macam metode. *Journal of Pharmaceutical Science*, *6*(3), 1221-1237. https://doi.org/10.36490/journal-jps.com.v6i3.197

Pariata, I. K., & Suta, I. B. P. (2022). Manfaat Dadap Serep (Erythrina subumbrans) Untuk Mengatasi Demam Pada Anak. *4*(1), 24-37.

Patala, R., & Awilia, N. (2023). Analisis kadar parasetamol generik dibandingkan bermerek dagang. *Jurnal Farmasi*, *7*(1), 7-12.

Priolaningsih, D. R., Susilowati, A. A., & As, Y. (2025). Effectiveness of Transdermal Antipyretic Patch from Dadap Serep (Erythrina subumbrans (Hassk.) Merr.) Leaf Extract on White Mice (Mus musculus) Hyperthermia Model. *Berkala Ilmiah Kimia Farmasi*, *12*(1), 28-35. https://doi.org/10.20473/bikfar.v12i1.61759

Purwasih, R., Endah, S. R. N., & Nofriyaldi, A. (2023). Formulasi dan Uji Aktivitas Sediaan Plester Hidrogel Ekstrak Etanol Daun Randu (Ceiba pentandra (L.) Gaertn) sebagai Antipiretik. *Jurnal Sains dan Kesehatan*, *5*(6), 941-952. https://doi.org/10.25026/jsk.v5i6.2030

Rangkuti. (2023). Uji Aktivitas Analgetik Ekstrak Etanol 70% Daun Dadap Serep (Erythrina subumbrans (Hassk.) Merr.) pada Mencit Putih Jantan Galur Deutschland Denken Yoken. *X*(2), 17-27.

Sani, F. K., Nazifah, N., & Muhaimin, M. (2022). Uji aktivitas analgetik ekstrak etanol daun ekor naga (Rhaphidophora pinnata (L.f) Schott) pada mencit putih jantan. *Jurnal Ilmiah Pharmacy*, *9*(1), 35-48. https://doi.org/10.52161/jiphar.v9i1.396

Sullivan, J. E., & Farrar, H. C. (2011). Fever and Antipyretic Use in Children. *Pediatrics*, *127*(3), 580-587. https://doi.org/10.1542/peds.2010-3852

Taribuka, N., Rochmaedah, S., & Silawane, I. (2020). Gambaran Pengetahuan Dan Penatalaksanaan Ibu Dalam Menangani Hipertermi Pada Balita Di Wilayah Kerja Puskesmas Perawatan Haria Kecamatan Saparua Kabupaten Maluku Tengah Tahun 2020. *Global Health Science*, *5*(3), 145. https://doi.org/10.33846/ghs5309

Walter, E. J., Hanna-Jumma, S., Carraretto, M., & Forni, L. (2016). The Pathophysiological Basis and Consequences of Fever. *Critical Care*, *20*, 200. https://doi.org/10.1186/s13054-016-1375-5

Widyasari, R., & Ratiningsih, R. (2017). Uji aktivitas antipiretik ekstrak etanol kulit jeruk manis (Citrus x aurantium L.) terhadap tikus putih (Rattus norvegicus) jantan galur Wistar yang diinduksi pepton 5%. *Jurnal Ilmiah Ibnu Sina*, *2*(2), 204-213.