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Building Society Through Science Dignity and Prosperity

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The Effect of *Wedelia biflora* Leaves Extracts on The Inflammation Cause by Allergic Reactions of Dermatitis in Mice (*Mus musculus*)

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Veterinary medicine Faculty, Syiah Kuala University, Banda Aceh, Indonesia

**Abstract.** The objective of the present study was to investigate useful of *Wedelia biflora* leaves extracts as anti allergic caused by dermatitis allergic in mice. A total of 24 males Wistar mice were utilized as experimental animal in this study. The experimental animals were divided into 4 groups, and each group has 4 mice. The first group was a control which was injected with aquades (negative control), while three other groups (group 2 to group 4) were fed with *Wedelia biflora* extracts orally at doses of 20 g, 40 g and 60 g per kg body weight, respectively, and the fifth group was a positive control which was injected with 10% ovalbumin, and the last group was given antihistamine drug (Loratadine) as compared control. All of experimental animals were injected with ovalbumin on day 1, 7, and 21, except for negative control which were injected with distilled water. The extracts of *Wedelia biflora* were fed for 21 days. The inflammation areas were measured using a digital caliper and analysis one-way Anova. The results showed that the treatment of *Wedelia biflora* were resulted in reducing inflammation size significantly (p<0.05) where the dose of 50 g/kg body weight was given the best result compared to other doses due to this value equivalent to antihistamine drug loratadine. We concluded that *Wedelia biflora* leaves extracts had the anti allergic effect.

**Keywords:** *Wedelia biflora*, water extracts, inflammation, Allergic dermatitis

**Introduction**

The case of dermatologic allergic is increasing over the years. This allergic is mostly occurring on the skins, nose, lungs and elementary organs. On the skins, this dermatitis causing inflammation (epidermis and dermis) and cause clinical disorders, polymorphic and eflorescence itching as a further effects (Sularsito and Djuanda, 2010). In general, the treatments for dermatic allergic are by applying the synthetic drugs and traditional medicines, for example *Wedelia biflora* to treat the itching. However, presently there was no scientific information regarding to use of *Wedelia biflora* as a alternative medicine for this disease. Hence, the objective of the present study was to examine the effect of extracts of *Wedelia biflora* leaves on the inflammation caused by dermatitis allergic on mice (*Mus musculus*) as a model.

**Materials and Methods**

**Materials**

A total of 24 males mice with average age of 2 months and average body weight of 25 g were used in this study. The mice sample were obtained from the Institute for Animal Disease Investigation (BPPH), Medan. While *Wedelia biflora* plants were obtained from the Countv Medicinal Plant Collection of the province Banda Aceh. Indonesia.
Results and Discussion

Inflammation is characterized by redness in the area of the body, usually accompanied by swelling, it is due to increased blood flow to this area. Generally, inflammation is caused by a reaction to certain substances for example protein; its can caused the skin to look redish, swollen and irritated. In this study, we detected that mice was dissensitive to allergen of Wedelia biflora extracts. This sensitivity was indicated by inflammation at the injection point of allergen. The response to Wedelia biflora extracts injection were occurred for 15-30 minutes, it was characterized by redness and swelling in the skin. Table 1 shows the diameter of inflammation, after given Wedelia biflora leaf extracts compared with controls.

Table 1. Diameter of inflammation, after being given the Wedelia biflora extracts compared to controls

<table>
<thead>
<tr>
<th>Replication</th>
<th>K₀</th>
<th>K₁</th>
<th>K₂</th>
<th>K₃</th>
<th>K₅</th>
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<tr>
<td>1</td>
<td>0.00+0.00</td>
<td>0.34+0.009</td>
<td>0.17±0.14</td>
<td>0.16±0.03</td>
<td>0.52±0.07</td>
<td>0.16±0.03</td>
</tr>
<tr>
<td>2</td>
<td>0.00+0.00</td>
<td>0.32</td>
<td>0.12</td>
<td>0.12</td>
<td>0.63</td>
<td>0.12</td>
</tr>
<tr>
<td>3</td>
<td>0.00+0.00</td>
<td>0.22</td>
<td>0.05</td>
<td>0.17</td>
<td>0.49</td>
<td>0.17</td>
</tr>
<tr>
<td>4</td>
<td>0.00+0.00</td>
<td>0.39</td>
<td>0.14</td>
<td>0.20</td>
<td>0.45</td>
<td>0.20</td>
</tr>
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</table>

Figure 1. Diameter of inflammation, after given the extract of wedelia biflora leaves compared to negative controls, positive control and comparators.

Note:
- K₀: negative control (destilled water)
- K₁: water extracts Wedelia biflora leaves with dose 20 g/ml body weight
- K₂: water extracts Wedelia biflora leaves with dose 40 g/ml body weight
- K₃: water extracts Wedelia biflora leaves with dose 60 g/ml body weight
- K₅: Positive control (ovalbumin 10%)
- K₆: Comparators: Antihistamin drug (loratadin 5 mg)

The results showed that the Wedelia biflora ecstracts was effective in reducing inflammation in mice (P<0.05), it is indicating that the Wedelia biflora leaf extract has an active compounds. According to the Miles (1990) and Murniana (1998) Wedelia biflora plants contains terpenoids and steroids. We assumed that this compound was able to eliminate the effects of inflammatory mediators such as itching by inhibiting phospholipase A2 aktivase. This inhibition will hamper the formation of arachidonic acid, and cyclooxgenase liposigenase, thereby disrupting the formation of prostaqandins and leukotrienes, and thus the inflammation does not occurs.

This is a preliminary study to assess the effectiveness of Wedelia biflora leaf extract as an anti-allergy, therefore further research is needed for example to evaluate the percentage of eosinophils during inflammation. This is further study is important to conduct, because
usually the inflammatory process will be accompanied by eosinophilic infiltration of the skin and mucosa (Laouini et al., 2003)

**Conclusions**

Based on results we concluded that *Wedelia biflora* leaves extracts had the anti allergy effect.

**References**
