

The Benefit of Topically Administered *Binahong* for Treatment of Sport Injury (Hematoma)

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Abstract

*The correct recovery therapy will assist athletes in the process of recovery and helps in the training to achieve better performance. Binahong (*Anredera cordifolia*) was proven empirically by the locals in assisting speedy recovery from an injury. This study was carried out using experiment post test only control group design on 10 male rats wistar. Experimental rat were divided into 2 groups, 5 rats each. All groups were made injured by hematoma on the leg. One group (the treatment group) was treated with 15% binahong topically for 3 days, while the other (the control group) was not given any treatment. The results showed that in control group the means of inflammation and fibroblast cells were (121.00 ± 16.06) and (40.00 ± 6.32) respectively, while those of the treatment group were (76.20 ± 16.62) and (74.20 ± 17.88) respectively. It was concluded that binahong given topically to hematoma on the rat's leg can reduce inflammation cells and increase fibroblast cells at the site of administration.*

Key words: binahong (*Anradera cordifolia*), hematoma.

INTRODUCTION

Competitive sport or individual sport is potential to cause injury. The injury can be caused by the player him/herself, by other player or other causes. Types of trauma injury in sport include hematoma, blister, pain, strain, fracture, dislocation, and blunt (Giam, 1993; Wibowo, 1995)

Clinical research on animals given blunt trauma injury revealed physical signs of: 1) redness, 2) hotness, 3) swelling and, 4) lack of activity, as well as microscopic indication, such as 1) infiltration of inflame cells (migration of cells to the trauma area), 2) cells necrosis, 3) congestion (as a result of dead red blood cells), 4) oedema (Sumartiningsih, 2011).

Observation in Semarang Unnes Soccer Club, shown that if the players get injury such as hematoma, the treatment given is only some spray to cool injury, then the injured players can play the game

again (Sumartiningsih, 2011). That is not good for healing of injury, because it only reduces pain.

Empirically, Javanese people, if they get traumatic injury, they are given binahong topically, as well as orally as a treatment (Sumartiningsih, 2011). Based on that phenomenon, this study attempted to test the effect of binahong rhizome given topically to sport injury, i.e. hematoma on rats.

MATERIAL AND METHODS

This study was conducted in 7 days in the Laboratory of Biochemistry Airlangga University, Surabaya Indonesia.

Materials

Animals. 10 male wistar rats aged 8-12 weeks, weighed 150-300 grams. The rats were fed with standard laboratory chows.

Table 1. The Descriptive analysis

group	N	Variabel	
		Mean of inflammation cell	Mean of fibroblast cell
Control	5	121.00 ± 16.06	40.00 ± 6.32
Topically	5	76.20 ± 16.62	74.20 ± 17.88

Table 2. Normality variabel test

Group	Df	Significant	
		Inflammation cell	Fibroblast cell
Control	4	0.000	0.000
Topically	4	0.001	0.001

Table 3. Differensiation of variable test

Group	df	Significant
Control & Topically sel radang	4	0.002
Control & Topically sel fibroblat	4	0.008

Plants. Rhizome of binahong were purchased in Budi Planter of Binahong in Malang.

Injury Material. Iron rod weighted 110 gram, pipe of 30 cm of length.

Methods

Preparation of Salep of Rhizome.

15 % powder of ground *binahong* rhizome was mixed with adeps lanae and vaselin album.

Experimental procedure. Experimental rats were divided into 2 groups, 5 rats each. All groups were made injured by hema-toma on the leg. One group (the treatment group) were treated with 15% *binahong* topically for 3 days, while the other (the control group) was not given any treatment.

Histological evaluation. Twenty four hours after 3 days therapy, the rat in all groups were sacrificed and their injured legs were quickly removed and fixed in buffered formalin, processed and embedded in paraffin wax. The paraffin sections were then stained with haematoxylin and eosin for light microscope examination.

Statistical analysis. The data were analyzed using one way ANOVA and LSD test PASW Programs.

RESULTS AND DISCUSSION

It revealed that inflammation cells count of the group treated topically with 15% *binahong* was lower (76.20 ± 16.62) than the control group (121.00 ± 16.06), but in fibroblast cells count, it was higher (74.20 ± 17.88) than the control group (40.00 ± 6.32), suggesting that the treatment decrease inflammation cells count and increased fibroblast cells count (table 1).

The normality test using one-sample test showed that there aren't any significance between variable each group control and topically group (table 2).

The difference test used paired sample test with LSD showed that any different effect between group control there is no treatment and group topically. In the treatment group, significant of inflammation cell (0.002), and fibroblast cell (0.008) (table 3).

DISCUSSION

Topical administration of 15% *binahong* to hematoma in 3 days showed that there was not any significant effect of *binahong* to reduce inflammation cell and to increase fibroblast cell.

The result is similar to the previous study, in which 3 days treatment with 10% *binahong* showed 5% decrease of inflam-

mation cells and 2% increase of fibroblast cells (Sumartiningsih, 2011).

The content of binahong worked together to give contribution in their activity (Sumartiningsih, 2009). This argument was in line with the effectiveness of *binahong* extract as wound healing (Panyaphu et al, 2011 and Villegas, 1997), and antimicrobial (Tshikalange, et al.2005).

In addition, the chemical content of *binahong* are flavonoids, saponins, and alkaloid (Yunita, 2008). The saponins exist in all part of the *binahong*, the saponins indicate of saponin triterpenoid and steroid (Astuti, 2011). Other study on the leaf of binahong showed that the chemical contents are saponins, alkaloids, polyphenols, falvonoids and mono polysaccharides including L-arabinose, D-galaktose, L-rhamnose (Rahmawati, 2008). The rhizome of binahong contains flavonoid, such as quercetin, in 0.6 mg per 100 grams of dried rhizome powder (Yang, 2008).

Flavonoids have functions as antioxidant, antifungi, antivirus, and antibacterial agents (Cushnie, et al., 2005, Abdel-Raheem, et al., 2009). Flavonoid is beneficial to those who consume it, such as for treatment of cancer, cardiovascular disease and inflammation (Sukandar, 2011).

The inflammation cells count in rats with hematoma treated by 15% binahong topically was lower than that of the control group. The wound healing attributed to be caused by the treatment was demonstrated by the higher count of fibroblast cells in the treatment group than that in control group.

CONCLUSION

The rhizome of binahong at doses 15% given topically provided improvement to hematoma based on two parameters, there is decreasing of inflammation cell and increasing of fibroblast cell. Therefore, binahong has prospect to be

used in treatment of hematoma caused by sport injury.

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