

The Effect of Binahong to Hematoma

Sri Sumartiningsih

Abstract—In elevating performance in competitive sports, an athlete must continuously train in achieving maximum performance, but needs to pay attention to recovery therapy, that is to recover from fatigue as well as injury. The correct recovery therapy will assist in process of recovery and helps in the training in achieving better performance. Binahong (*Anredera cordifolia*) was proven empirically by the locals in assisting speedy recovery from an injury. Clinical research with lab animals receiving blunt trauma injury, microscopically shown signs of: 1) redness, 2) heatiness, 3) swelling and, 4) lack of activity. There is also microscopic indication of: 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) uedema. On administration of Binahong for 3 days, there is a significant drop of 5% in cell inflammation, 2% increase of fibroblast (cell membrane) count. Conclusion: Binahong do assist in reducing cell inflammation and increase counts of cells fibroblast. Suggestion: In helping athlete's to recover from force injury, we need study about Binahong's roots to inflammation cell and healing of injured cell.

Keywords—Binahong, sport injury, hematoma

I. INTRODUCTION

PHYSICAL activity, especially in the sport, always faced the possibility of injury, and this injury will impact the disruption of physical activity, psychological and decreased performance. Sports injuries are all sorts of injuries that arise, either at the time of exercise or at the time of exercise (match) or after the match. Bodily injury commonly affected are the bones, muscles, skin, tendon and ligament[1].

Sports Injuries caused by: 1) external violence (the causes that originated from outside) is an injury that occurred due to outside influences, for example: a) because of body contact sports: football, boxing, karate, b) sporting goods: hockey stick, ball, Racket, etc., c) because the circumstances surrounding that causes an injury, for example, circumstances that do not meet the requirements of the field, racing cars, the field with holes, 2) Internal violence (because that comes from within), this injury occurs because of coordination of the muscles and joints are less than perfect, giving rise to false movements, causing injury. The size of the leg or legs of unequal length; antagonistic muscle power is not balanced, it can happen because of lack of heating, lack of concentration. Kinds of injury can be a tearing of muscle, tendon or ligament, 3) over-use (continuous use / too tired), this occurs because of excessive use of muscle or too tired, the injury usually occur gradually (chronic). The symptoms: muscle stiffness, strain, sprain, until the stress fracture [1,2].

Sri Sumartiningsih is Department Sport Science in the Semarang State University, Jl. Sekaran-gunungpati Semarang Central Java 50229 Indonesia, (phone: 024 6719337; fax: 024 8508007; website: <http://www.unnes.ac.id> e-mail: sri.sumartiningsih@gmail.com).

Medical problems in sports and sports medicine research center in Singapore from 1976-1985, are as follows: 1) the type strain of the muscles and tendons was ranked first by 45.2%, 2) sprain of the ligaments and joints of 25 , 9%, 3) kuntasio injury and hematoma occurred in as many as 1172 patients (5.5%) of 21 371 people, 4) fractures and dislocations of 1.6%, 5) sucks because heat and thermal shock by 0.1%, 6) others (eg khondromalasia) of 21.7% [2]. Distribution of the risk of injury to the thigh by 9%, while knee injuries have the greatest risk of 22.5%, the percentage of injuries due to the dual function, namely as the driving and resisting weight, so the greater the likelihood of injury[1]. At the time of exercise frequent collisions between players or collision with a blunt object. Conflicts are likely to cause bleeding under the skin (hematoma), especially in front of the thigh area or on the back[2]. In pilot study in Semarang Soccer Club, Unnes Soccer Club, show that if any injury (hematoma) because impact for other players, they give some spray for cooled injury, than they are playing again. Actually Javanese people if any trauma in their body because of impact other things, hematoma they use Binahong (*anradera cordifolia*) for treatment. From fact in community I'll try to analyses of the relation binahong and hematoma.

II. BINAHONG (ANREDERA CORDIFOLIA)

A. Binahong

Binahong plants located in Indonesia, China, Australia, Paraguay to southern Brazil, northern Argentina and the United States. Binahong Latin name is *Anredera cordifolia* (Ten.) Steenis, synonyms *Boussingaultia cordifolia* (Ten.), *Boussingaultia gracilis*, *Boussingaultia Pseudobasselloides* Haum [3], while the other equation is *anredera* country name, *enredadera del mosquito* (Spanish), *filikafa*, *Gulf madeiravine*, *heartleaf madeiravine*, *Madeira vine* (UK), *lamb's tails*, *mignonette vine*, *Parra de Madeira* (Spanish), *tapau*, *'uala hupe*, *teng san chi* (China) [3,4]. This plant grows easily in the lowlands and highlands. Widely planted in pots as an ornamental and medicinal plants. Generative (seed), but more often developed or cultivated vegetatively through rhizome roots.



Fig.1. Leave of Binahong



Fig 2. Rhizome of binahong

Classification of plants binahong as follows: 1) Kingdom: Plantae (plants), 2) Subkingdom: Tracheobionta (vascular), 3) Superdivisio: Spermatophyta (produce seed), 4) Divisio: Magnoliophyta (Flowering), 5) Class: Magnoliopsida (dashed two / dicots), 6) Sub-class: Hamamelidae, 7) Order: Caryophyllales, 8) Familia: Basellaceae, 9) Genus: Anredera, 10) Species: cordifolia Anredera (Ten.) Steenis [5]. The results of phytochemical binahong with test tubes in getting the chemical content is flavonoids, saponins and alkaloid[14]. Binahong plants have a total flavonoid content of 0.6 mg per 100 grams of dried root powder[6].

B. Hematoma

Hematoma is bleeding under the skin due to damage to both the soft tissue of skin, muscle, tendon or ligament accompanied by rupture of blood vessels, when the blood that came out earlier gathered in the muscle tissue and the tissue under the skin [1]. Bleeding (hematoma) was caused by a collision with another person or with an object. Swelling due to bleeding (hematoma) may occur in the thigh front or back [2]. Hematoma is a blood clot in a liquid or a subcutaneous or intramuscular space. In most hematoma resorption will occur, and circumstances typically associated with a contusion (bruise) [7]. Inflammation (inflammation) is a protective response intended to eliminate the initial cause of cell injury and removing cells and necrotic tissue caused by damage to the home [8]. Inflammation is a response to tissue injury and infection, ongoing inflammatory process occurs when the vascular reaction in which fluid, blood elements, white blood cells (leukocytes), and chemical mediators gathered at the site of tissue injury [9]. Inflammatory response in the form of tissue damage has many advantages, among others; isolate damaged areas, mobilize effector cells and molecules in place and begin healing. Inflammation is the body's way of protection against damage [10]. Inflammation is divided into two basic patterns. Acute inflammation is inflammation that lasts a relatively short from a few minutes to several days, characterized by fluid and plasma protein exudation and leukocyte accumulation neutrofilik prominent. Chronic inflammation lasts longer (in days) until many years) and typically characterized by influx of lymphocytes and macrophages accompanied by a proliferation of blood vessels and scar tissue formation. However, these two basic forms of inflammation can overlap, and many factors to change the

course of histological [8].

Inflammatory signs include: heat (calor), red (rubor), swelling (tumor), pain and impaired function [11],[8].

C. The Relation of Binahong and Hematoma

Several studies shows flavonoids have some effect farmokologis among others: 1) to be antimicrobial, 2) is anti inflamasi, 3) stimulate the formation of collagen and 4) protect the blood vessels[12]. Anti-inflammatory functions of flavonoids has been shown both in vitro and in vivo. he mechanism of flavonoids in inhibiting the inflammation in 2 ways: 1) inhibits the release of arachidonic acid and secretion of enzymes from lysosomes and neutrophil cell endothelial cells and 2) inhibit the proliferation phase and the phase of the inflammatory exudates[13].

II. MATERIAL AND EXPERIMENTAL PROGRAM

A. Material

The material for this research there are: extract of Binahong 10% for orally and topically, food for subjek, aquades. The subjek in this research is male Ratus Norvegicus Strain Wistarr.

The tool to make injury there are: iron rod in weight 110 gram, pipes 30 cm, 35 cm and 40 cm.

B. Testing Program

To get the injury hematoma that we want, we try to drop the iron with a height of 3 categories (30 cm, 35 cm, 40 cm).

III. RESULT AND DISCUSSION

Clinical research with lab animals receiving blunt trauma injury, microscopically shown signs of: 1) redness, 2) heatiness, 3) swelling and, 4) lack of activity. There is also microscopic indication of: 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) uedema. On administration of Binahong for 3 days, there is a significant drop of 5% in cell inflammation, 2% increase of fibroblast (cell membrane) count.

TABLE I
THE RESULT OF THE EFFECT BINAHONG TO HEMATOMA

Group	Eu	He	Hi	Nc	Iic	Fc
Negative control	-	-	-	-	-	-
Positive control	+	+	+	+	+	+
3 days	+	+	+	+	-	+
Orally	+	+	+	+	+	-
3 days	+	+	+	+	+	-
topically	-	+	-	-	-	+
7 days	-	+	+	+	+	+
Orally	-	+	+	+	+	+
7 days	-	+	+	+	+	+
topically	-	+	+	+	+	+

Information; Eu = eudema, He = hemorage, Hi= hipermia, Nc = Necrosis cell, Iic= infiltration of inflammation cell, Fc = fibroblast cell.

The study show that the effect of binahong orally for 3 days to rats fed a blunt object trauma to the muscle obtained the eudema, hemorage, hipermia, cell necrosis, and the formation of fibrotic tissue, but inflammatory cell infiltration was not apparent.

The research found that the oral group given binahong for 3 days of swelling (eudema), bleeding, increased number of red blood cells (hipermia), cell death (necrosis), there was movement of inflammatory cells, and have started to form fibrin threads. But in the topical group for 3 days (who applied), the formation of fibrin threads are not found here, as well as the control group 3 days. While the group orally for 7 days was found hemorage and the presence of fibroblast cells, topical groups for 7 days showed that hemorage, hipermia, cell necrosis, there are inflammatory cells, and fibroblast cells.

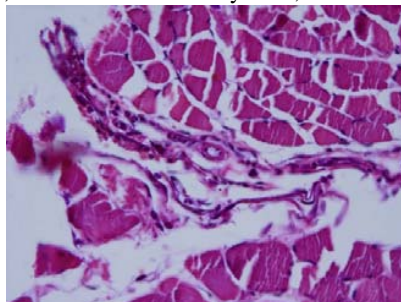


Fig.3 Infiltration of inflammation cell

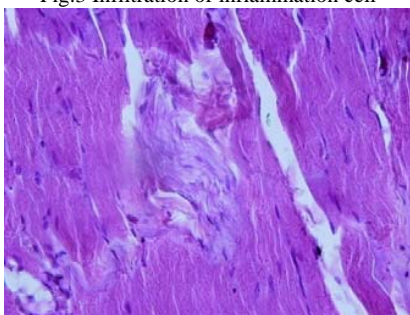


Fig. 4 the formation of fibrin threads

IV. CONCLUSION

From the results of this study concluded that further research is needed to reveal the role Binahong of inflammatory cells and cells that help the healing of injured cells.

REFERENCES

- [1] Wibowo Hardianto, dr. 1995. *Pencegahan dan Penatalaksanaan cedera olahraga*. EGC. Jakarta
- [2] Giam C K, dr dan Teh K C, dr. 1993. *Ilmu Kedokteran Olahraga*. Binarupa Aksara. Jakarta Barat. Hal 135;163-165.
- [3] Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1999. *Manual of the Flowering Plants of Hawai'i*. 2 Vols. Bishop Museum Special Publication 83. University of Hawai Press and Bishop Museum Press, Honolulu, HI.
- [4] PIER (Pasific Island Ecosystem at Risk). 2000. *Insasive Plant Species: Anradera Cordifolia*. Available: <http://www.hear.org/pier/ancor.htm> (Acceses: July 25, 2008)
- [5] Plantamor. 2008. Khasiat Binahong. <http://www.plantamor.com/spcimage.php?plct=O&spcx=anrcoria&recid=1387&popname=Binahong&genus=Anradera&species=cordifolia&var/12/11/2008>
- [6] Ray-Yu Yang PhD, Shou Lin BSc and George Kuo PhD. 2007. *Content and Distribution of Flavonoids Among 91 Edible Plant Species*. Asia Pac J Clin Nutrision 2008;17 (SI): 275-279.
- [7] Rischrock Theodore, MD(editor), diterjemahkan oleh Dharma Adji, Lukmanto Petrus, gunawan. 1990. *Ilmu Bedah*. Jakarta. Penerbit Buku Kedokteran (EGC). Hal 21.
- [8] Robbins. 2007. *Buku Ajar Patologi Volume 1*. Penerbit Buku Kedokteran (EGC). Jakarta. Hal 35.
- [9] Kee Joyce L & Hayes Evelyn R. 1996. *Farmakologi Pendekatan Proses Keperawatan*. Jakarta. Penerbit Buku Kedokteran. Hal 310-322.
- [10] Kelly RW, King AE, Critchley HOD. 2001. Cytokine control in human endometrium. *Reprod*. 121: 3-19
- [11] Joseph A. Bellanti. 1993. *Imunologi*. Gajahmada university press (Peter in the book Joseph: 223)
- [12] Sabir Ardo. 2003. *Identifikasi golongan flavonoid dalam propolis Trigona sp dari kabupaten Bulukuma Sulawesi Selatan yang digunakan pada perawatan kaping pulpa langsung*.Majalah Kedokteran Gigi Dental Journal Edisi khusus temu ilmiah nasional III 6-9 Agustus 2003. Universitas Airlangga: Surabaya.Hal 59-60.
- [13] Sabir Ardo. 2003. *Pemanfaatan flavonoid di bidang kedokteran gigi*. Majalah Kedokteran Gigi (Dental Journal Edisi khusus Temu Ilmiah Nasional III, 6-9 Agustus 2003. Universitas Airlangga: Surabaya. Hal; 81-84.
- [14] Yunita. 2008. *Kandungan Binahong*. Laporan Penelitian. Universitas Muhammadiyah Solo.