

SANGKURIANG CATFISH (*CLARIAS GARIEPINUS VAR*) SKIN EXTRACT ACTIVITY ON FIBROBLAST AND COLLAGEN SYNTHESIS FOR SKIN BURN HEALING

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Abstract

Background: Burn healing of IIB degree requires a relatively longer time for healing followed by hypertrophic scar formation. Sangkuriang catfish (*Clarias gariepinus var*) skin extract topical contains amino acids of collagen. Collagen is the main component of skin wound healing. The aim of this research was to determine the influence of Sangkuriang catfish skin extract topical treatment on fibroblast and collagen synthesis for burn healing

Methods: Sangkuriang catfish skin was extracted using HCl 2% for 48 hours and neutralized by NaOH 1 M. Twenty-eight male *Rattus norvegicus* strain Wistar were used for this research were, divided into K3, P3, K10, and P10 groups. Each member of group was subjected with IIB degree burn injury on the back, then K3 and K10 groups were treated by using aquades topically twice a day whereas P3 and P10 groups topically treated with Sangkuriang catfish skin extract twice a day.

Results: Sangkuriang catfish skin extract topical treatment increase fibroblast number and significant extensive collagen percentage on 10th day

Conclusion: Topical treatment of Sangkuriang catfish skin extract could accelerate burn healing by increasing number of fibroblast and percentage of extensive collagen.

Keywords: Sangkuriang Catfish, Collagen, Fibroblast, Burn Healing

INTRODUCTION

In Indonesia, burn injury cases were higher than other cases of injury. Burn Injury of IIB degree happens when skin tissue damage reaches almost entire of dermis, however low damage in the rest of epithelial tissue^[1]. Based on “*Riset Kesehatan Dasar (Riskesdas)*” the prevalence of burn injury in Indonesia was 70% in 2013^[2]. Burn healing requires a relatively longer time and followed by hypertrophic scar formation. Wound healing itself consist of four phases: haemostasis, inflammation, proliferation and remodelling^[1].

Collagen is the main component in connective tissue that induce wound healing by generating fibroblast proliferation, stimulate new granulation and epithel tissue formation around burn injury^{[1][3]}. Fish skin collagen is better than livestock and poultry collagen because of its superior bioavailability (absorbed up to 1.5 times more efficiently) and because of severe infections

(zoonosis), including bovine spongiform encephalopathy, avian and swine influenza, and tooth-and-mouth disease in bovines, pigs, and buffalo, occur worldwide^[4]. Fish skin collagen is also halal to be consumed and it has lower immunoreactivity risk on wound healing^{[4][5][6]}. It has relatively high glycine to keep the moisture of skin and low hydroxyproline causing fish skin collagen tends to be more elastic than livestock and poultry collagen^[6]. The aim of this research is to determine if topical treatment with Sangkuriang catfish skin could accelerate burn healing by increasing synthesis of fibroblast and collagen on wound area.

METHODS

This research used Sangkuriang catfish (*Clarias gariepinus var*) skin extract which contains collagen amino acid. Sangkuriang catfish skin was taken from home industry waste of catfish nugget and crackers in

