

ANTIOXIDATIVE EFFECT OF *Lactobacillus* spp VERIFIED BY **IN VITRO AND IN VIVO STUDIES**



Komang Ayu Nocianitri ¹⁾, I Nengah Sujaya ²⁾, Yan Ramona ³⁾ ¹Depart. of Food Sci. Technol., Fact. of Agricultural Technol., Udayana University, Indonesia. ²School of Public Health, Fact. of Medicine., Udayana Univ. ³Depart. of Biology, Fact. of Science, Udayana Univ. ⁾nocianitri68@yahoo.com

A.INTRODUCTION

Lactic acid bacteria (LAB) has been widely utilized by the food industries in creating functional food products to maintain the health of the human digestive tract, known as probiotics. Probiotics are live microorganisms which when administered in the right amount can provide healthful effects on the host. Probiotics have been known to affect healthy as it can improve the balance of beneficial bacteria in the digestive tract. The functional properties of probiotic are strain specific, therefore it is necessary to screen the lactobacilli which will be intented as an antioxidative probiotic. The purpose of this study was to determine the antioxidant activity of *Lactobacillus* spp. isolated from infant feces.

B. MATERIAL AND METHODS

The antioxidant activity of 20 isolates of *Lactobacillus* spp. was screened by in vitro. The strain showed high antioxidant activity then was further analysed its antioxidant activity in rats. The in vivo study uses a randomized block design with four treatments: standard diet, high-fat diet, high-fat diet and Lactobacillus sp. FBB60, and high-fat diet and Lactobacillus sp. FBB81. This study used a strain of Wistar rats weighing approximately 80 g. Each treatment consisted of 6 rats were each given feed according to treatment.



Result of In Vitro Studies

Isolate	Inhibition of lipid peroxidation (%)	Scavenging Hydroxyl Radical (%)	Chelating metal ion Fe (%)
Lactobacillus sp. FBB 60	61.20	29.71	31.54
Lactobacillus sp. FBB 81	57.01	29.31	44.52



Stock Isolate







Lactobacillus sp. FBB60 Lactobacillus sp. FBB81

MRS Broth 5000 rpm, 4^oC 10 min

Result of In Vivo Studies

it (g)	140,0 120,0 100.0			Treatment	рН	Total LAB (cfu/g cecum)
weight of ra	80,0 60.0		→ SD → HF → HF-FBB60 → HF-FBB81	SD	6,65 + 0,05	6,16 x 10 7
	40,0			HF	6,71 + 0,05	5,56 x 10 7
	0,0	1 2 2 / 5		HF + FBB60	6,72 + 0,08	7,68 x 10 7
weeks		HF + FBB81	6,72 + 0,03	5,15 x 10 7		

Treatment	Liver MDA (nmol/g)	Serum MDA (nmol/ml)	GPx Activity (U/g liver)
Standar Diet (SD)	7,09 <u>+</u> 0,75	3,19 <u>+</u> 0,58	2.09 <u>+</u> 0.51
High Fat Diet (HF)	8,11 <u>+</u> 1,20	4,11 <u>+</u> 0,80	1.50 <u>+</u> 1.00
HF—FBB60	7,89 <u>+</u> 2,11	4,00 <u>+</u> 0,93	1.72 <u>+</u> 0.63
HF—FBB81	7,39 <u>+</u> 1,03	3,72 <u>+</u> 1,04	1.98 <u>+</u> 0.71

Discussion

The results of *in vivo* study showed that *Lactobacillus* sp. FBB60 fed with high-fat containing diet could reduce levels of MDA to 2.66% and 2.70% in the liver and serum, respectively. In addition, Lactobacillus sp. FBB81 lowered levels of MDA to 8.81% and 9.46% in the liver and serum, respectively. The activity of GPx enzyme increased by 13.17% by Lactobacillus sp. FBB 0 and 24.67% by Lactobacillus sp. FBB81. These results implied that both *Lactobacillus* strain possess antioxidative effects by inhibiting the lipid peroxidation.

ACKNOWLEDGEMENTS

This research was partly funded by Research Grant "Penelitian Hibah Bersaing", Indonesian Directorate General of Higher Education (IDGHE) 2015 –2016 and was undertaken under the Research



Certificate

This certifies that

Dr. Ir. Komang Ayu Nocianitri, M. Agr. Sc

As

Poster Presenter

at 9th International Seminar of Indonesian Society for Microbiology (ISISM 9) "Optimising Microbe Utilization for Human Welfare"

> Horison Ultima Hotel Palembang, 14 - 15 November 2017 South Sumatera Province, Indonesia

Dr.Ir. Siswa Setyahadi, Man Chairman of Indonesian for Microbiology

Drewing

banc

Dr. Ir. Mulawarman, M.Sc Chairman of Organizing Committee