

## I. INTRODUCTION

*Lactobacillus* is a genus of bacteria belonging to the lactic acid bacteria group which could produce lactic acid as the major end product. They are nonpathogenic and reside as normal flora in human intestine (1), vagina (2) and mouth (3). They are generally used as the probiotics due to their beneficial effects on human health. Due to the antimicrobial activity, *Lactobacillus* may be beneficial as bioprotective agents to control infections in their habitats and interfere with the colonization of pathogens. The reported antimicrobial mechanisms against the pathogens were revealed the capability to produce antimicrobial compounds (4) including lactic acid and acetic acid that could permeabilize the bacterial outer membrane (1, 5), hydrogen peroxide that could act as a toxic molecule to inhibit pathogens (6, 7), and bacteriocins that could inhibit closely related bacteria (7, 8).

Several studies of the culture supernatant which contained bacteriocins were reported to the antimicrobial activity against pathogens. The first purified *Lactobacillus* bacteriocin had been reported and characterized as lipocarbohydrate-protein complex (9) which further classified as class IV bacteriocins. Subsequently, class II *Lactobacilli* bacteriocins (10), class III bacteriocins and class I bacteriocins or lantibiotics had been purified and reported (11). For example of these *Lactobacilli* bacteriocins, microcin produced by *Lactobacillus rhamnosus* strain GG (1) and acidophilin produced by *Lactobacillus acidophilus* (12), lactocin F produced by *L. acidophilus* (13) and an antimicrobial peptide produced by *Lactobacillus salivarius* subsp. *salivarius* (14) were reported the activity against the gastrointestinal or food-borne pathogens and urogenital pathogens, respectively. Some reports showed that *Lactobacilli* can affect to the growth of the oral pathogens, such as *Streptococcus mutans*, *Streptococcus salivarius*, *Actinomyces viscosus*, *Porphyromonas gingivalis* and oral *Candida albicans* (4, 15, 16). In the present study, the hypothesis is based on the key action of bacteriocins which produced by lactic acid bacteria, for example *Lactobacillus*. If the bacteriocins possess the inhibitory effect to the major oral pathogenic bacteria, the application of these compounds may be possible to eradicate the pathogen and disease. From our previous study, 1,000 isolates of lactic acid bacteria isolated from the goats' intestines and milks exhibited the broad spectrum

antimicrobial activity towards the oral pathogens including *Porphyromonas gingivalis*, the most important causative agent for chronic periodontitis. *Lactobacillus paracasei* was one of the most potent active organisms and was reported to be found as the resident species in healthy oral cavity (15). In the present study, the antimicrobial activity of *L. paracasei* against *P. gingivalis* is so mentioned as the interesting points. If there is any inhibition, the inhibitory substances will be isolated, characterized and partially purified.