

Effects of *Lactobacillus* spp. on improving the efficiency of *Scutellaria baicalensis* treatment in *Helicobacter pylori* infection

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Helicobacter pylori infection is associated with chronic gastritis, peptic ulcers, and gastric cancer. About 50% of the population in the world is infected by *H. pylori*. Furthermore, 70% to 95% of *H. pylori*-infected patients are suffering from peptic ulcer. Huang Qin usually refers to the dried root of *Scutellaria baicalensis* Georgi. It is been used as an herbal medicine to treat inflammation, cardiovascular diseases, respiratory and gastrointestinal infections in Chinese medicine for many years. Its active compounds include baicalin, baicalein, wogonin derivatives and β -sitosterol. Baicalein, a primary metabolite of baicalin, differs from its mother compound merely by the 7-substituent (i.e. it possesses a phenolic hydroxyl (7-OH) instead of a glucuronic acid). It has been showed antibacterial, lipid-lowering, anti-lipid peroxidative, and anti-arthritis activities. In our study, minimum bactericidal concentration (MBC) of baicalein, its obviously has higher bactericidal concentration as least 4-fold higher than that of baicalin. Therefore, the biotransformed baicalein is highly possible to treat or prevent *H. pylori* infection. Microbial enzymes play important roles in biotransformation. Such bacteria are reported to produce β -glucuronidase activity. In this study, used five different *Lactobacillus* spp. field isolates were screened for best β -glucuronidase activity. An isolate *Lactobacillus* spp. strain JB-3 showed the best β -glucuronidase activity, the enzyme activity was 2 fold higher than other isolates. By monitoring the concentration of baicalein, strain JB-3 could efficiently convert baicalin into baicalein. The conversion ability of 9.4×10^9 CFU/mL of JB-3 was doubling the amount of baicalein in an hour. In infected AGS cells, 31 μ M of baicalein significantly decreased *H.pylori*-induced IL-8 by 20 % after 6 hrs treatment then baicalin. And also, the association ability of *H. pylori* was suppressed by 31 μ M of baicalein for 6 hrs by 25 %. In this study, we determined that bioconversion of *Lactobacillus* spp. could improve the biological activity of *Scutellaria baicalensis* extract for treating *Helicobacter pylori* infection.

Keywords: *Scutellaria baicalensis* , baicalein, *Lactobacillus* spp., *Helicobacter pylori*