Enzymatic properties of lactic acid bacteria isolated from gastrointestinal tract of suckling pigs

K. Kluczyńska*, D. Gwiazdowska, K. Juś

Department of Natural Science and Quality Assurance, Faculty of Commodity Science, Poznań University of Economics, Poznań Poland

Introduction: Numerous studies have shown the health promoting impact of lactic acid bacteria (LAB) in animals. This group of microorganisms is defined by status GRAS (generally recognized as safe), therefore they are beneficial for the host health. Facing the trend of elimination of chemical compounds, selected strains of LAB that exhibit relevant activity, may be a worth mentioning alternative. Furthermore LAB possess animals’ growth promoting properties. One of functional characteristics of lactic acid bacteria is their ability to produce varied enzymes. LAB occurrence contributes to digestion of nutrition compounds by animals. Therefore this group of bacteria was selected for the studies conducted on prototype of dietary supplement for monogastric animals.

Aim: The aim of the study was to evaluate possible properties of LAB isolated from sucking pigs gastrointestinal tract which could be the basis for the further production of dietary supplement for weaning pigs. Among conducted analysis the enzymatic properties of selected LAB strains were tested. Selection of LAB for the study was conducted on the basis of their morphological features as well as antimicrobial properties tested in previous researches.

Materials and methods: Enzymatic activity including amylolytic and proteolytic ones of selected LAB strains was determined by well and spot diffusion assays. Amylolytic properties were measured using the starch agar medium. After the incubation of selected LAB strains at 37°C for 48 h, plates were flooded with iodine solution for 5 min. Clear zones around the spots were considered as amylolytic activity. Proteolytic activity was tested using skim milk agar. After the incubation of LAB strains at 37°C for 48 h on agar plates, clear zones around wells were interpreted as proteolytic activity. Experiments were carried out in triplicate.

Results: The selected LAB strains isolated from gastrointestinal tract of suckling pigs exhibits both amylolytic and proteolytic activity. The results were dependent on type of LAB strain. Conclusion: Lactic acid bacteria, demonstrating strong both amylolytic and proteolytic activity, were selected for further research on prototype of dietary supplement for weaning pigs. The production of different enzymes by chosen LAB is significant in order to select strains of technical interest.