

# The Growth of ABT-5 Culture in Whey Supplemented with Whey Protein Concentrate

Bojan Matijević<sup>1</sup>, Rajka Božanić<sup>2</sup>, Ljubica Tratnik<sup>2</sup>

<sup>1</sup>Polytechnic of Karlovac, Trg J.J. Strossmayera 9, Karlovac, Croatia, [bojan.matijevic@vuka.hr](mailto:bojan.matijevic@vuka.hr)

<sup>2</sup>Faculty of Food Technology and Biotechnology at Zagreb University, Pierottijeva 6, Zagreb, Croatia, [rbozan@pbf.hr](mailto:rbozan@pbf.hr)

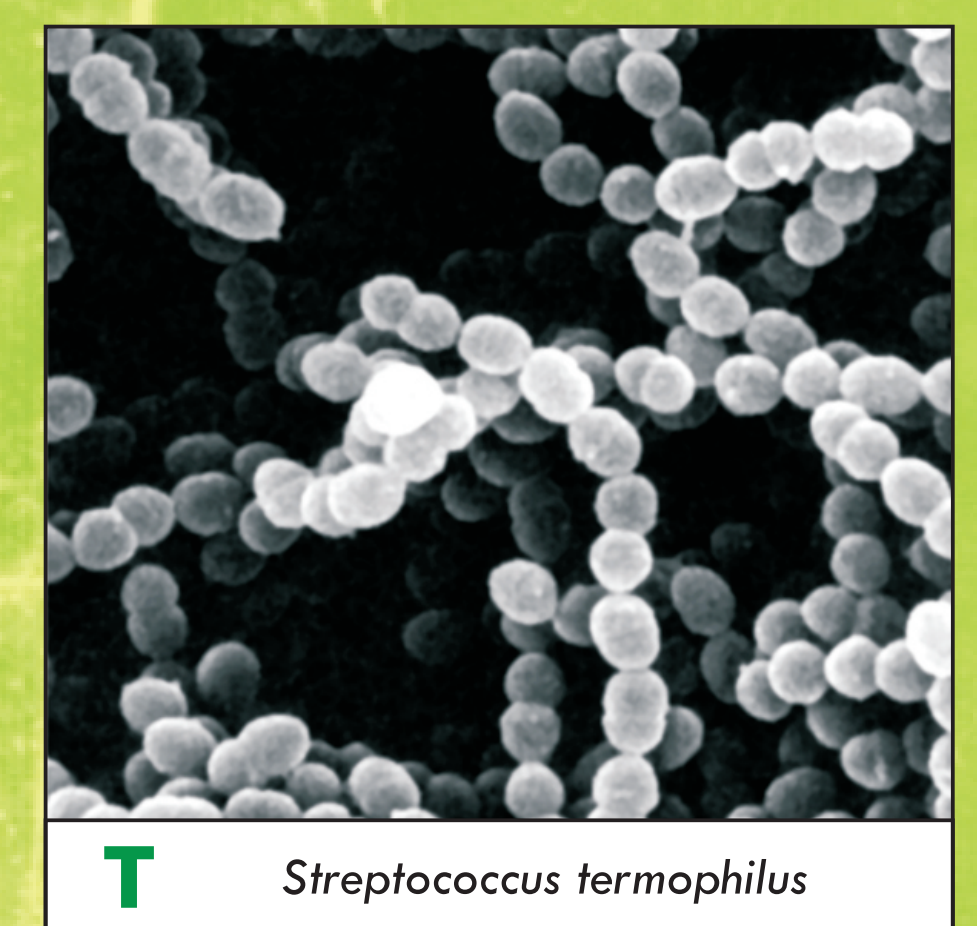
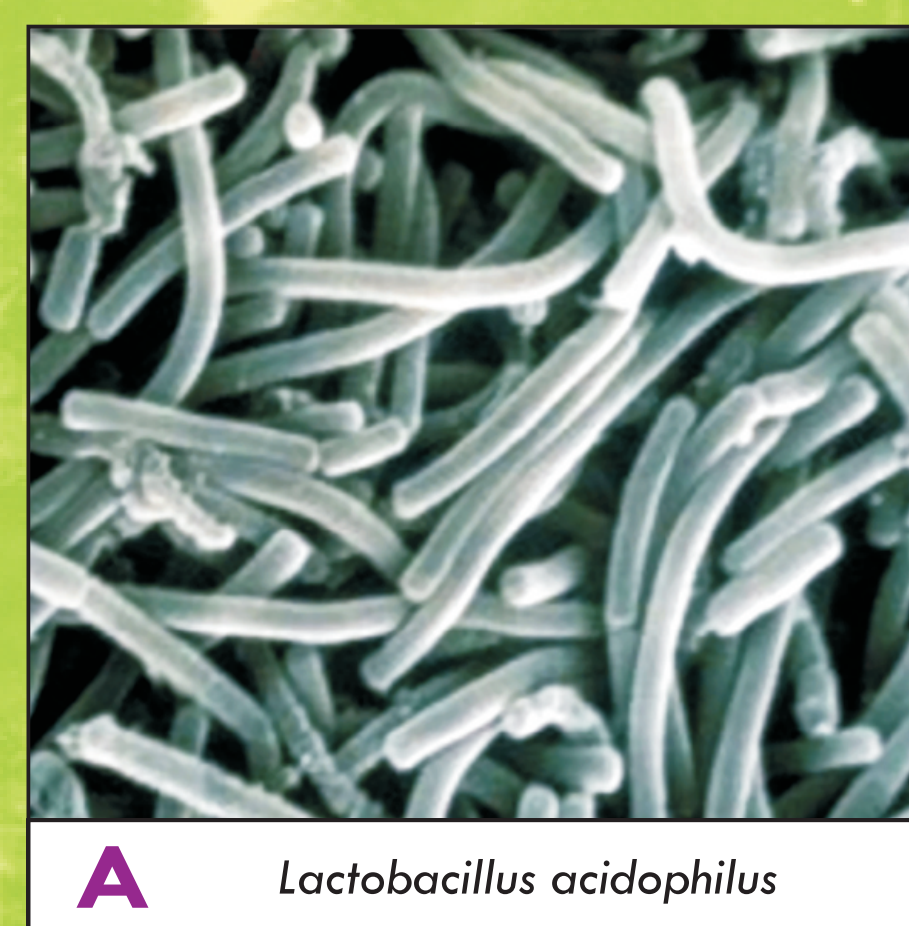
## Introduction

Whey is a by-product which is got from milk during the production of cheese or casein. Its usage as human food started after the finding that whey is valuable source of nutrients. Whey is also a good medium for growth of many bacteria and it can be raw material for making probiotic fermented beverages. The researches show that whey proteins stimulate the growth of some lactic acid bacteria which is especially important in using probiotic cultures, which adapt more difficult and grow slower in milk, especially *Bifidobacterium* spp. Cheap and available source of whey protein is whey protein concentrate (WPC). There is also a huge number of research on influence of WPC on growth, activity and survival of probiotic bacteria and textures in yogurt, but there is only a limited number of similar research on whey.

## The Aim

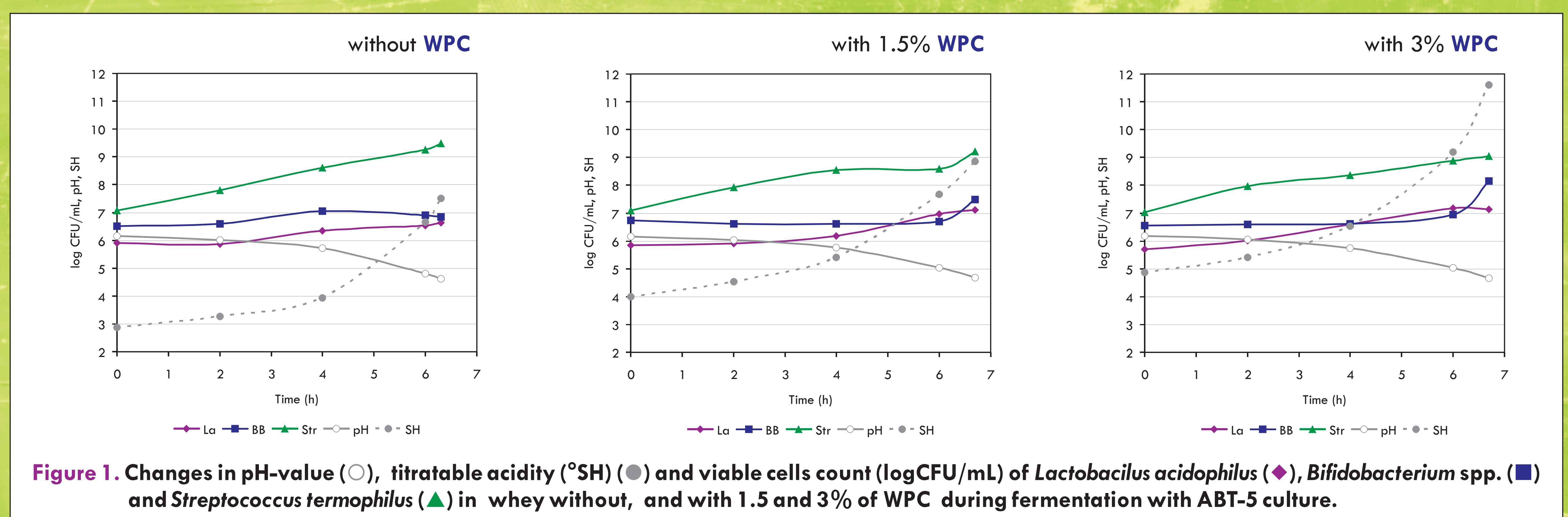
This research examines the influence of WPC on growth and activity of ABT-5 culture (*Lactobacillus acidophilus*, *Bifidobacterium* spp. and *Streptococcus thermophilus*) in reconstituted sweet whey.

## Materials and Methods



Powdered whey was dissolved in water up to 6% of dry matter. To examine the influence on growth of ABT-5 culture (*Lactobacillus acidophilus*, *Bifidobacterium* spp. and *Streptococcus thermophilus*), three samples were made. The first sample was without and the other two had 1.5 and 3% of WPC. Whey was pasteurized at 73 °C during 15 s, it was cooled down at 37 °C and inoculated with ABT-5 culture. The culture used was DVS ABT-5 (Chr. Hansen, Denmark). Fermentation was conducted until pH-value 4.6 was reached. During the fermentation the changes of viable cells counts, pH-values and titratable acidity (°SH) were observed.

## Results



**Figure 1.** Changes in pH-value (○), titratable acidity (°SH) (●) and viable cells count (logCFU/mL) of *Lactobacillus acidophilus* (◆), *Bifidobacterium* spp. (■) and *Streptococcus thermophilus* (▲) in whey without, and with 1.5 and 3% of WPC during fermentation with ABT-5 culture.

## Conclusions

- Fermentation lasted approximately 6.5 hours regardless the amount of WPC addition.
- The viable cells count of *Lactobacillus acidophilus* was higher in whey supplemented with WPC ( log CFU/mL= 7.13) compared to the whey without WPC ( log CFU/mL = 6.63).
- The highest viable cells counts of *Bifidobacterium* spp. was observed in whey supplemented with 3% of WPC ( log CFU/mL = 8.16) compared to whey without WPC ( log CFU/mL = 6.84).
- The addition of WPC did not influence on the viable cells counts of *Streptococcus thermophilus* and at the end of whey fermentation in all samples was nearly the same ( log CFU/mL = 9.29).