ABSTRACT BOOK

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PW424 Influence of shaking and viable cell numbers on microbial conjugated linoleic acid (CLA) production

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Background: Conjugated linoleic acid (CLA) isomers are naturally produced from dietary linoleic acid (LA) by ruminal bacteria, but several probiotic strains have also revealed the capacity to produce these bioactive compounds. The amount of CLA produced is strain-dependent and may also be influenced by cultivation conditions.

Objectives: *In vitro* studies usually test CLA production by growing strains in culture medium containing a specific LA concentration, but few have applied shaking during incubation; shaking may improve access to substrate. Hence, this work aimed to study the influence of shaking on CLA production.

Methods: *Bifidobacterium breve* DSM 20091*, Lactobacillus gasseri* VR-III-51, *L. plantarum* DSM 20205 and *L. sakei* 20017, previously identified as CLA-producers, were selected for this study. They were inoculated (1% v/v) in MRS medium, containing 0.5 mg/mL of LA and incubated at 37 °C for either 24, 48 or 72 h, with and without shaking (150 rpm). Viable cell numbers were determined and fatty acid concentration was analyzed by gas chromatography.

Results: Shaking reduced LA conversion rates for all strains except *L. gasseri* VR-III-51. In what concerns correlation between viable cell numbers at the end of each incubation period and LA conversion rates, important differences were observed: a negative correlation for *L. gasseri* VR-III-51 with shaking, a positive correlation for *B. breve* DSM 20091 without shaking and no correlation for *L. plantarum* 20205 and *L. sakei* DSM 20017, with/without shaking were observed. In conclusion, shaking and viable cell numbers (incubation time) affect microbial CLA production in a strain-dependent manner.