

Growth of Nonproteolytic *Lactococcus lactis* in Culture Medium Supplemented with Different Casein Hydrolyzates

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The growth and lactic acid production of nonproteolytic variants of *Lactococcus lactis*, three *Lactococcus lactis* ssp. *cremoris* strains (E8, Wg2, and HP) and one *Lactococcus lactis* ssp. *lactis* strain (1076), were compared with those of their parent strains in Garches medium supplemented with different casein hydrolyzates. Molecular weight distribution and AA composition of casein hydrolyzates were different. Two fractions of alcalase casein hydrolyzates separated and concentrated by a two-step ultrafiltration process were compared with two commercial casein hydrolyzates. Proteinase-negative variants of Lactococci exhibited the same specific growth rate and production of lactic acid as proteinase-positive strains in all enriched Garches media. Cell growth was affected by molecular weight distribution of peptides in hydrolyzates, but not by their AA composition. *Lactococcus lactis* ssp. *lactis* grew better than *L. lactis* ssp. *cremoris*, but its lactic acid production was similar to that of E8 strains. Among *L. lactis* ssp. *cremoris*, Wg2 strains grew better in Garches medium supplemented with casein hydrolyzates with molecular weight <2000 Da, but growth and lactic acid production of HP strains were better in Garches medium enriched with casein hydrolyzates with molecular weight >2000 Da. Different casein hydrolyzate fractions could be used to supplement culture medium and to standardize milk cultures; however, choice of casein hydrolyzates depends on subspecies of Lactococci.

Key Words: *Lactococcus* • alcalase • casein hydrolyzates • culture media

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