World Academy of Science, Engineering and Technology
International Journal of Nutrition and Food Engineering
Vol:11, No:07, 2017

The Ability of Organic Acids Production by Lactic Acid Bacteria in M17 Broth and Squid, Shrimp, Octopus, Eel Infusion Broth

Authors : Fatih Özogul, Sezen Özçelik, Yesim Özogul

Abstract : Lactic, acetic, succinic, propionic, formic and butyric acid production by lactic acid bacteria (LAB) were monitored in M17 broth (the control) and some fish (squid, shrimp, octopus, and eel) infusion broth by using HPLC method. There were significant differences in terms of lactic, acetic, succinic, propionic, formic and butyric acid production ($p < 0.005$) among bacterial strains. Acetic acid production was the lowest by LAB while succinic acid followed by propionic acid was synthesized at the highest levels. Lactic acid production ranged from 0 to 938 mg/L by all LAB strains in different infusion broth. The highest acetic acid production was found by Lb. acidophilus and Lb. delbrueckii subsp. lactic in octopus and shrimp infusion broth, with values of 872 and 674 mg/L, respectively while formic acid formation ranged from 1747 mg/L by Lb. acidophilus in octopus infusion broth to 69 mg/L by Lb. delbrueckii subsp. lactis in shrimp infusion broth. Propionic acid and butyric acid productions by St. thermophilus were 9852 and 3999 mg/L in shrimp infusion broth while Leu. mes. subsp. cremoris synthesized 312 and 9 mg/L of those organic acid in European squid infusion broth, respectively. Apparently, LAB strains had a great capability to generate succinic acid followed by propionic and butyric acid. In addition, other organic acid production differed significantly depending on bacterial strains and growth medium.

Keywords : Lactic acid bacteria , organic acid, HPLC analysis, growth medium
Conference Title : ICFPSFS 2017 : International Conference on Food Product Safety in Food Science
Conference Location : Barcelona, Spain
Conference Dates : July 27-28, 2017

Open Science Index, Nutrition and Food Engineering Vol:11, No:07, 2017 publications.waset.org/abstracts/72696/pdf