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***In situ* CLA and CLNA production: a potential strategy to elaborate food products enriched in bioactive fatty acids**

Pimentel L.L., Fontes A.L., Gomes A., Rodríguez-Alcalá L.M.

Universidade Católica Portuguesa, CBQF - Centro de Biotecnologia e Química Fina -
Escola Superior de Biotecnologia,
Porto, Portugal

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Conjugated linoleic acid (CLA) and, more recently, conjugated linolenic acid (CLNA) isomers have shown potential to be applied as new functional ingredients, given its bioactive potential to exert benefits to human health. These fatty acids are naturally produced by rumen bacteria that convert linoleic acid (LA) and linolenic acid (LNA) into their conjugated forms. However, strains of lactobacilli, bifidobacteria and propionibacteria have also revealed capacity to produce these compounds. Thus, the aim of this work was to test the *in situ* production of CLA and CLNA isomers in a dairy matrix using a potential producing strain, in order to verify the suitability of this strategy for CLA and CLNA enrichment in food products.

Bifidobacterium breve NCIMB 702258 was selected for this study as previously showed CLA/CLnA production capacity. Its CLA/CLNA-producing ability was firstly tested by incubation in MRS medium containing LA, α -LNA or both (at 0.5 mg/mL each) for 24 h at 37 °C. Fatty acid concentration was analyzed in the supernatant through gas chromatography and it was revealed LA and α -LNA conversion rates of, respectively, 30.36% and 67.33%, when substrates were added separately, and of 14.83% and 55.40%, when together, being CLNA production higher than CLA in both situations. *Bifidobacterium breve* producing capacity was then tested in a food matrix (semi-skimmed milk, 1.6% fat) under the same conditions applied in MRS medium. CLA/CLNA isomers production was positive although substrate conversion rates were lower than those obtained in MRS medium. α -LNA conversion was higher than LA when the substrates were added separately (28.09% and 24.19%, respectively), but not when both LA and α -LNA were assayed together (14.55% and 27.60%, respectively).

In conclusion, *in situ* production of microbial CLA and CLNA isomers is a strategy with potential to be applied in the future elaboration of CLA- and CLNA-enriched food products.