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Título artículo: Inhibitory activity of aromatic plant extracts against dairy-related *Clostridium* species and their use to prevent the late blowing defect of cheese

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**RESUMEN:** The aim of the present work was the selection of aromatic plant essential oils (EOs) and/or ethanolic extracts (EEs) to prevent the late blowing defect (LBD) of cheese caused by *Clostridium* spp. EEs resulted more effective than EOs to inhibit dairy-borne *Clostridium* spp. in vitro. Savory, hyssop, lavender and tarragon EEs, which showed the lowest minimal inhibitory concentration against *Clostridium tyrobutyricum*, were selected to study the prevention of LBD caused by this bacterium in cheese.

Addition of savory and lavender EEs to cheese milk delayed LBD by 2 weeks, but at the end of ripening these cheeses showed similar clostridial vegetative cells counts, spoilage symptoms and propionic, and butyric acids levels than blown control cheese. Tarragon EE, with the highest content in caffeic acid, also delayed LBD by 2 weeks, but it was more effective to inhibit *Clostridium*, since cheese with tarragon EE showed minor LBD symptoms, lower vegetative cells count and lower concentrations of propionic and butyric acids than the rest of cheeses made with EEs. This fact could be also attributable to the greater number of antimicrobial terpenes (1,8-cineole, 4-terpineol,  $\alpha$ -terpineol, isoelemicin, methyl eugenol, and methyl trans-isoeugenol) detected in this cheese. This is the first report on the application of EEs to control *C. tyrobutyricum* in cheese.

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