

Antimicrobial and saccharolytic activity of *Bacillus subtilis* and *Bacillus pumilus* isolated from Soumbala, a fermented African locust bean food condiment.

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In order to select starter cultures for a control fermentation of African locust bean, eight strains of *B. subtilis* and two strains of *B. pumilus* isolated from Soumbala were investigated on their antimicrobial activity against indicators of food borne pathogens as *Staphylococcus aureus*, *B. cereus* and *Escherichia coli*. They were also investigated on their ability to degrade predominant polysaccharide (arabinogalactan) and indigestible oligosaccharides (stachyose and raffinose) in African locust bean.

The antimicrobial activity was first studied by agar diffusion tests. Further study was made by broth assays where *Bacillus* and indicators were mixed and survival determined by plate counting at different times. Bacteriocin production was investigated by testing the effect of protease on the inhibition of the indicators on agar. The degradation of arabinogalactan, stachyose and raffinose as well as the profiles of residual sugars were studied by High Performance Anion Exchange Chromatography, Pulsed amperometric detection (HPAEC-PAD).

The *Bacillus* isolates in general inhibited all the indicators in agar. The supernatants of pure cultures of *Bacillus* spp. inhibited one strain of *B. cereus*, one of *S. aureus* and one of *E. coli*. The supernatant of mixed cultures of *Bacillus* spp. and indicators inhibited all the indicators. The treatment with protease eliminated or decreased the inhibitions. Isolates of *B. subtilis* were able to inactivate all the indicators in the broth assay.

Arabinogalactan and stachyose were partially degraded while raffinose was not detected after 48h of fermentation by isolates of *B. subtilis*. Melibiose, non identified oligosaccharide assumed to be mannotriose as well as fructose and traces of galactose were detected as residual sugars.