Abstract

It has been demonstrated that crude extracts of Aspergillus niger (An) used as additives for animal nutrition have enhanced the digestibility of forages on in vitro assays. In this work the prebiotic component of An that stimulates the growth of a cellulolytic bacterial consortium from ruminal origin (CBCRO) was characterized. Ultrafiltrated fractions of less than 30 kDa, heat treated at 60, 90 and 120 ºC were used. The fractions were obtained by ionexchange chromatography and their average molecular weight was determined by molecular exclusion chromatography. Protein and carbohydrate contents and the infrared spectra were determined on the active fractions. Results showed that all the heat treated ultrafiltrated fractions significantly increased (P<0.05) carboxymethylcellulases' activities, and protein and acetate productions of the CBCRO. Molecular exclusion chromatography established that the active fraction had a molecular mass of 6.1 kDa, whereas only one active fraction was detected through ion exchange chromatography. Biochemical analysis and infrared spectra data suggest that the prebiotic component of An has a peptidic nature.

Keywords

Prebiotics, cellulolytic anaerobic bacteria, Aspergillus niger.