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## Growth, acid production, bile tolerance and adherence to columnar epithelial cells of four species of bifidobacteria

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Four species of bifidobacteria were studied for growth, acid production; bile acids tolerance and adherence to sheep epithelial cells were studied. The species examined were *Bifidobacterium longum* ATCC 15707, *B. bifidum* ATCC 2203, *B. angulatum* ATCC 2238 and *B. breve* ATCC 2258 were tested for growth and environmental conditions. The log phase of *B. longum* and *B. angulatum* were found to be after 14 hours phase whereas the log phase of the other two species were found to be after 17 hours of inoculation. Both *B. longum* and *B. angulatum* reduced the pH faster than both *B. bifidum* and *B. breve*. *B. longum* had the highest growth and *B. breve* had the lowest growth rate. All the studied species exhibited some degree of bile tolerance. *B. longum* and *B. bifidum* were more resistant to bile acids than the other two species. Adhesion of the four species to the columnar epithelial cells of the small intestine of sheep was studied. All the tested species showed some degree of adhesion; however, *B. longum* adhered to the epithelial cells more than other three species.

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