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The Effects of Adhesion of Caco-2 Cells and Tolerance against Environmental Stress on the Cell Surface Hydrophobicity in Bifidobacteria Isolates from Humans

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It is known that the bacterial cell surface hydrophobicity(CSH) is relative to colonial adhesion and tolerance of environmental stress. This study was conducted to provide basic information about the relationship between adhesion, tolerance and CSH of Bifidobacteria isolated from humans. 19 isolates identified as *B. longum,* 15 as *B. adolescentis,* 11 as *B. breve,* 2 as *B. angulatum,* 1 as *B. infantis* were used in this study.

B. longum and *B. adolescentis* group showed various levels of CSH. *B. adolescentis* isolates had higher level of CSH than *B. longum. B. breve* isolates were inclined to exhibit a lower level of CSH. Among them, *B. adolescentis* A24 was found to have the highest CSH of 97%.

B. adolescentis A24 showed the highest degree of adhesion on Caco-2 cells. Over 500 *B. adolescentis* A24 adhered per 100 Caco-2 cells. *B. breve* group showed low levels of CSH, however, displayed high degree of adhesion. There was no correlation between the adherence of *Bifidobacteria* on human enterocyte-like Caco-2 cells and CSH.

B. adolescentis A24 showed strong tolerance against oxygen, pH 3.0 and 1.0% bile salt. But, even though the CSH was high as in *B. longum* A8, B16 and *B. adolescentis* A11, B1, the tolerance was consistently not strong. The adhesion on Caco-2 cells and the tolerance against external stress didn't show correlation with the CSH of *Bifidobacteria.*