T68 Evaluation of adherence of *Bifidobacterium* and *Lactobacillus* strains to cell membranes by blot analysis and optical tweezers.
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Bacterial adhesion to intestinal mucosa is one of the most important criteria for selection of any potentially probiotic strain. This adhesion is mediated by specific molecules present on the bacterial cell surface. Little information is available on the effect that milk fat globule membrane (MFGM) components have on the adhesion of probiotic bacteria. We have combined two techniques, dot blot analysis and laser tweezers to characterize the binding properties of several strains of *Bifidobacterium* and *Lactobacillus*. Dot blot analysis has been proven to be helpful in the determination of the affinity of bacteria to specific components in milk or the surface of bacteria. Optical tweezers have many applications in measuring biological forces due to their ability to exert piconewton scale force and to manipulate biological material with minimal damage. The optical trap consisted of a laser near infrared region Ti:saaph at 1064 nm, that was strongly focused through a lens with a very short focal length (it was used a numerical aperture microscope objective =1.25). To perform an adhesion evaluation, a bacterium was optically trapped and brought in contact with a 10 µm diameter polystyrene microsphere coated with intestinal mucosa or MFGM by passive adsorption technique. Various calibration procedures were implemented in order to provide absolute force measurements. These measuremnts were compared to the relative intensities of binding obtained by dot blot assays. In this method, the intensity of binding is proportional to the color intensity developed in a dot blot assay from biotinilated bacteria adhering to a specific concentration of intestinal mucosa or MFGM immobilized in a membrane. This data will demonstrate the efficacy of this technique of adhesion force measuring and this research will contribute to knowledge of optical tweezers and their applications to investigations of living biological systems.

Key Words: Probiotic bacteria, Laser tweezers, Adhesion