A mixture of human-derived probiotic strains of \textit{Lactobacillus acidophilus}, \textit{L. agilis} and \textit{L. rhamnosus} was used as a probiotic culture in ice cream manufacture. Viability and survival of these probiotic cultures were investigated in two different ice cream formulations. Ice cream with sucrose and ice cream with aspartame were prepared and each of these was divided into two subgroups: one with direct addition of the probiotic culture and one with milk fermented by the same probiotic culture. Ice cream samples were stored at 20 degrees C for 6 months and the survival rate of cultures were determined monthly. Probiotic cultures underwent tests for resistance to bile salts, antibiotics, acidic conditions, etc. They were found to be highly resistant to such challenges. Chemical analysis of ice cream samples, such as determination of acidity, pH and solid matter, was also performed. The probiotic cultures remained unchanged in ice cream stored for up to 6 months regardless of the sweeteners used. Using probiotic cultures in ice cream mixes did not alter the characteristics of the product.