The number of consumers concerned about the harmful effects of excess fat in their diet is growing worldwide. Studies showed the connection of fat with high levels of plasma cholesterol, digestive problems, circulatory and stress, while a low-calorie diet can reduce the risk of heart disease, diabetes and cancer. The main objective of this work was to elaborate fermented milk with low glycemic index, besides prebiotic and probiotic properties. In this experiment, there were added 5% inulin in all formulations with four types of sweetener (agave, aspartame, sucralose and stevia) to a fermented milk to verify their acceptance. The acceptance protocol used was the ordinate method described by Chaves (1993). It was identified the fermented milk with sweetener aspartame as the most accepted. On the other hand, the greater rejection was the fermented milk containing agave sweetener. A total of 120 people, who carried out the sensory analysis of dairy drinks, majority expressed willingness to buy the fermented milk sweetened with aspartame sweetener, followed by those who preferred sucralose sweetener. In general, all the variations had good acceptance by the judges. All formulated products can be used as an alternative to development new fermented products aimed at improving the health of consumers because they are rich in soluble fiber and have low concentrations of fat and sucrose. Characterized as diet, these fermented milks are an ideal dairy product for diabetics or obese consumers.