Functional dairy products stand for the nutritional value, such as well proteins of high biological value. Therefore, the objective of this study was to develop and evaluate the features of yogurts taken from probiotic microorganisms *Lactobacillus acidophilus* and *Bifidobacterium* spp. and polydextrose as soluble prebiotic fiber. Formulations were prepared by an experimental of $2^4$ central composite approach, three replications of center and eight axial, totaling 27 different samples from different process conditions, which were analyzed for physico-chemical, microbiological and sensory features after 1 and 14 days of manufacturing. It was evaluated were influenced of the variables: milk powder (0, 2.5, 5, 7.5 and 10% w/v), polydextrose (1, 3.25, 5.5, 7.75 and 10% w/v) and lactic culture (1, 2.25, 3.5, 4.75 and 6% v/v) concentrations and the fermentation temperature (35, 37.5, 40, 42.5 and 45 °C) in protein and mineral content of yoghurts. Products presented lactic acid bacteria amounts greater than $10^8$ CFU/mL. The grades attributed testers in assessing the overall impression of yogurt ranged from 4.86 to 6.71 and from 5.57 to 6.91 in the 1st and 14th day of manufacturing, respectively. Samples with higher concentrations of protein and minerals were obtained with 10% milk powder, 10% polydextrose, 6% lactic culture, and 45 °C as the fermentation temperature. Taking into consideration evaluated preparation conditions it is possible to obtain a functional yoghurt quality in the physico-chemical and sensorial features.