The objective of this study was to determine the effect of prebiotics (β-glucans and MOS) on fermentation processes, rumen microorganisms, and also animal growth rate and feed conversion ratio in calves (FCR). The study was performed on 36 clinically healthy, Black and White Lowland breed calves, aged 6-8 weeks and with an average body weight - 75 ± 4.12 kg. The calves were randomly divided into two equal groups. The experimental calves were fed with traditional feedingstuffs (C-J feed) supplemented β-glucans (49 mg) and mannan-oligosaccharides (52 mg) per kilo of body weight. The animals in control group received the same feedingstuffs without the additives. The rumen fluid samples were collected one week intervals by seven weeks. The following parameters in the samples were determined: protozoal and bacterial counts, and the basic parameters of rumen metabolism (pH, volatile fatty acids, glucose fermentation, cellulose digestion and reduction of nitrates). Moreover, the body weight gain of calves with GR and FCR during the experiment were estimated. The obtained results showed the increased total number of bacteria and decreased amount of protozoa in experimental group of calves. The increase of the bacterial number resulted from the metabolic processes in a rumen leading to the pH decrease due to the activation of glucose fermentation, cellulose digestion, reduction of nitrates and volatile fatty acids synthesis. These changes were corresponded with the higher final body weights with more profitable GR and lower feed conversion rate in experimental calves.