Food security refers to a set of production standards that aims to ensure the sanity of food in all its aspects, in quest of high-quality final products and consumer health. This study aimed to evaluate the chemical and microbiological stability of flour of fruits and vegetables (FFV) during storage for 180 days. The FFV, obtained from the production of sports drink based on the concentrated juice of fruits and vegetables, contained 50% carbohydrate, 22% fiber, 8% protein, 5% fat and 4% ash. We analyzed the levels of acidity and microbiological stability (Salmonella sp, Coliforms 35°C and 45°C, Escherichia coli, Staphylococcus aureus, viable mesophilic aerobic bacteria and yeasts and molds) from two lots of FFV. All samples were microbiologically stable and within the Brazilian regulation standards, during storage. In both lots, the acidity contents showed a progressive reduction ranging from 959.42±5.37 (day 0) to 166.04±8.49 (day 180) expressed in %mg citric acid. Recent studies have reported that the reduction of acidity during fruit storage is related to restricted carbohydrate availability for physiological functions, however without interfering in nutritional quality. Moreover, the oxidizing potential of the bioactive compounds and the low water activity of the sample, may have favored oxidation of organic acids, promoting the aldehydes and esters formation. Since this feature may modify the sensory aspects, further studies are necessary. As a final point, these results showed that the FFV is a good choice as nutritional supplement allowing storage for 180 days.