The term bioavailability indicates the proportion of the nutrient that is utilized by the organism, being related to chemical forms present in food. The sequential extraction technique for metal dosage was applied in a flour (FFV) produced from the residue of isotonic drink based on concentrated juice of fruits and vegetables. The total metal contents: magnesium, manganese and zinc were determined in the sample, in the fractions obtained through sequential extraction and in the further extraction residue. The extractors were used in this sequence: (I) calcium chloride 1M; (II) acetic acid 0.5M/ 5% ammonium acetate [pH5.0]; (III) acetic acid 0.5M and (IV) hydrochloric acid 0.5M. Each extractor was in contact with the sample for one hour. The methodology was optimized concerning the use or not of an agitation system type Dubinoff water bath at 25°C and 95 rpm. The total metal contents were analyzed using ICP-MS. The data were treated statistically. The total content of the metals: magnesium, manganese and zinc were, respectively, 1.47±0.40 mg/g, 35.70±10.11 µg/g and 20.53±6.04 µg/g. The metals recovery was 100%. Generally no significant differences were found using the agitation, except for the extractor III for the metals: magnesium and zinc, with an increase of 80 and 20%, respectively, and the extractor IV for manganese, with 52% of reduction. It remains that the fraction III needs to be evaluated in order to verify if the increase in the extraction would be related to a change in the molecular structure of the species analyzed.