Abstract

The effects of maturity degree and culture type on oligosaccharide content were studied in soybean seed, a rich source of non-digestible galactooligosaccharides (GOS). Therefore, two commercial cultivars of yellow soybeans (ripe seeds) and two of green soybeans (unripe seeds) were chosen. One yellow and one green soybean seed were from intensive culture, while one yellow and one green soybean seed were biologically grown. Low molecular weight carbohydrates (LMWC) in soybean seeds were extracted with 85% ethanol and determined spectrophotometrically and by high performance liquid chromatography. LMWC in soybean seeds were mainly: stachyose, raffinose and sucrose. Oligosaccharide content was not affected significantly, either by biological or intensive culture technique. On the contrary, significant differences in GOS content were found depending on ripeness degree of soybean seeds. Ripe yellow soybean seeds showed a higher oligosaccharide content (1.84-1.95%), than unripe green seeds (1.43-1.61%). Other LMWC content was also affected by ripeness degree, thus making that the relative percentage of GOS was higher in immature (47-53%) than in matured soybean seeds (21-34%). Moreover, in order to purify soybean GOS, biologically grown yellow soybean seeds with a higher GOS content were selected and a previously reported method was followed. Although the GOS containing fraction was enriched, the yield obtained was low and an effective purification was not achieved. According to these results, yellow soybean seeds seem to be a good source of GOS but, in order to improve their purification, simple methods must be further developed and evaluated.

Keywords