

Effective methods for increasing coumestrol in soybean sprouts.

Abstract

Coumestrol (CM), a biologically active compound found in Leguminosae plants, provides various human health benefits. To identify easy and effective methods to increase CM content in vegetables, we developed a quantitative analysis method using high-performance liquid chromatography (HPLC). Using this method, we found that soybean sprouts ($1.76 \pm 0.13 \mu\text{g/g}$) have high CM contents among nine vegetables and evaluated the difference in CM contents between two organs of the sprouts: cotyledons and hypocotyls. Next, soybean sprouts were cultivated under different light, temperature, and water conditions and their CM contents were evaluated. CM content was higher in hypocotyls ($4.11 \pm 0.04 \mu\text{g/g}$) than in cotyledons. Cultivating soybean sprouts at 24°C enhanced CM content regardless of light conditions, the growth of fungi and bacteria, and sprout color. Thus, we identified methods of soybean sprout cultivation to increase CM content, which may provide health benefits and enhance value.