

Abstract

The rise in human population threatened food security. A dietary shift towards plant-based food is necessary in the Western world. Hence, peas are a suitable candidate to tackle these problems as it does not only provide high protein content, but also is able to mitigate the greenhouse gas emissions when compared to conventional protein sources. However, peas, and in particular, extracted pea protein may be slightly off-putting for some consumers as it gives off flavor. Fortunately, not all peas have the same sensorial properties; different pea variants will have different nutritional and sensorial characteristics. Hence, this paper investigated the protein content, saponin concentration, and oxidative products of 6 different pea variants, to accommodate the project's timeline, from a total of 203 different pea ascensions grown by a Danish seed breeding company using Dumatherm, liquid chromatography tandem mass spectrometry (LC-MS/MS), and spectroscopy assay, respectively. The results will be used in a breeding strategy in future pea varieties. Both SR88 and SR87 had the highest protein content of 30.924 ± 0.151 g protein/100 g DM and 26.713 ± 5.344 g protein/100 g DM, respectively. However, these variants also showed higher concentrations of saponins and oxidative products. Moreover, protein content showed a positive correlation with saponin and hydroperoxide concentrations, with hydroperoxide having a stronger correlation than saponins. These differences were attributed mostly by genetic factors and some environmental factors. All in all, these findings were able to shed some light in understanding the different traits of various pea varieties that will be later used in future pea breeding programs.

Keywords: Oxidation, Pea, Protein, Saponin