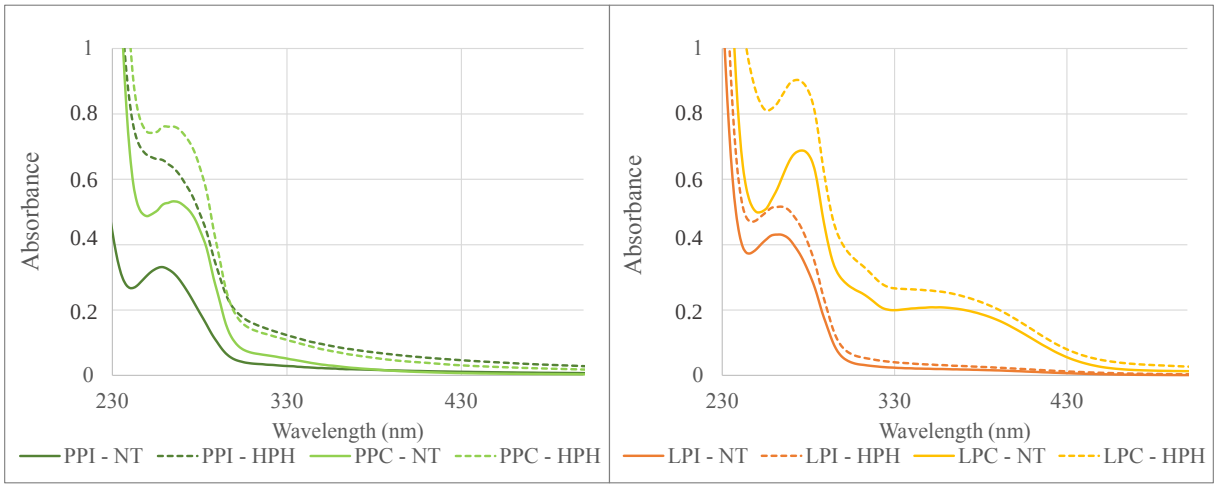
Supplementary info 5: Absorbance spectrum of the supernatants of the aqueous suspensions, either treated by high-pressure homogenization (HPH, dotted curves) or not (NT, full curves), between 230 and 500 nm.



The supernatants of the suspensions (prepared at 1 g of proteins / 100 g) were analyzed by spectrophotometry. The obtained absorbance spectra allowed to recover the results from protein solubility. The absorbance at 280 nm (maximum absorbance wavelength of aromatic amino acids) being supposedly proportional to the protein concentration in the supernatants (i.e., the amount of soluble proteins), those results are consistent with an increasing protein solubility with a decreasing state of protein aggregation. Then, we can see that the protein peak, normally located at 280 nm, is here located around 260 nm. This shift in absorbance suggests potential interactions between proteins and other compounds, thus encouraging towards deeper investigation. For instance, it was previously shown that oxidized polymers of polyphenols could interact with protein structures via covalent and non-covalent bonding, thus negatively altering protein solubility (Narváez-Cuenca et al., 2013; Ozdal et al., 2013). LPC spectra also showed another peak around 380 nm which was not observed for the other samples. As this sample was coloured, we may assume that this observation is linked to pigments remaining in the supernatant. Those results contribute to demonstrating the inherent complexity of these samples, and the impact of non-proteinaceous compounds on their spectrophotometric properties.

Additional references:

Narváez-Cuenca C.E., Vincken J.P., Gruppen H., Quantitative fate of chlorogenic acid during enzymatic browning of potato juice Journal of Agricultural and Food Chemistry 2013 1563-1572

Ozdal T., Capanoglu E., Altay F., A review on protein-phenolic interactions and associated changes Food Research International 2013 954-970