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CHARACTERISATION OF BIO-INSECTICIDE PROTEINS IN INDUSTRIAL RESIDUES FROM PEA SEEDS (*Pisum sativum* L.)

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As a consequence of the adverse effects of conventional pesticides on the environment, the demand for bio-pesticides is in a continuous increase. Nevertheless, only few effective molecules are commercially available, mainly due to the production costs of these products. In this context, the aim of this research was to characterise potential bio-insecticide molecules in the residues from an alimentary industrial processing of the pea, *Pisum sativum* L. A group of proteins, the lectins, is present in relatively high proportion (2%) in pea seeds. Knowing the binding capacity of lectins to membrane glycosyl groups of digestive tract cells, the pea lectins (*Pisum sativum* lectins, PSL) found in the industrial residues was investigated as potential bio-insecticide on aphid pest. Toxicological bioassays using artificial diet systems on *Myzus persicae* aphid have been developed to select the active residues from the pea seed protein extraction process. First PSL have been localised within the industrial processing among different extraction residues. Then, chromatographic methods have been performed on the selected residues using FPLC technology. Classical combination of gel filtration (Sephadex G75) and affinity chromatographic methods were used. Due to the particular properties of lectins, which bind to carbonyl group and can be eluted after the filtration step with a solution of glucose, some interesting fractions were collected and further studied by 2D electrophoresis coupled with mass spectrometry (Maldi Tof MS/MS). Separated proteins from the 2D gels were identified following data bank investigations using the Mascot software. New ranges of toxicological test on *M. persicae* aphid were performed using the selected fractions leading to the rm (including mortality rates, fecundity and development durations) and LC₅₀ calculations. These biological parameters are discussed in relation to the nature of the identified proteins, including lectins and their potential use as economic bio-insecticides to control insect pests such as aphids.