



Evaluation of canola precipitated protein Isolate functional properties and the preparation of functional ingredients from Oil Extraction Industries residue

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In this research, the effect of variety and dehulling treatments on the chemical composition (protein, glucosinolate, phytic acid and phenolic acid), of laboratory samples (meals and flours from canola varieties *Brassica napus*, cv. Quantum, PF 7045/91, Hyola 401), protein extractability and precipitability as well as chemical composition (protein, glucosinolate and phytic acid) and some functional properties (nitrogen solubility index, NSI, water absorption, fat absorption, emulsifying activity, emulsion stability and whippability) of precipitated protein isolates obtained from all laboratory samples were investigated and compared with commercial canola meal and precipitated protein isolate from it. In our research the optimum pH for the extraction and precipitation of all samples investigated protein were considered 12.0 and 4.5-6.0, respectively. Values of protein extractability was between 37.5% (commercial canola meal) and 69.5% (PF, dehulled meal) and variety and dehulling had reasonable significant effect ($P<0.01$) on the protein extractability, and commercial canola meal showed the least protein extractability in aqueous NaOH. Dehulling had very significant effect ($P<0.01$) on the increasing of precipitated protein isolates protein and phytic acid content. The glucosinolate content of all protein isolates was below the detection limit (< 0.2 mg/g meal). precipitated protein isolates had about 85% protein, and there was not significant difference ($P>0.01$) among them. Dehulling had reasonable significant effect ($P<0.01$) on NSI of all laboratory samples examined. Water absorption of laboratory samples exceeded 200% which compares favorably with that of soybean meal. Variety and dehulling had very significant effect ($P<0.01$) on water and fat absorption, emulsifying activity and whippability of precipitated protein isolates. precipitated protein isolates obtained from Quantum and PF 7045/91 varieties had maximum fat absorption and emulsifying activity (significant differences $P<0.05$), respectively. Our results indicated that PPI would be suitable for incorporation as binder or extender in meat products.

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