

## Effect of the Extrusion on Functional Properties and Mineral Dialyzability from *Phaseolus Vulgaris* Bean Flour

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**Abstract.** The effects of extrusion conditions on cooking degree, flour dispersion viscosity and mineral potential availability of extruded bean flour were studied. *Phaseolus vulgaris* beans of the agronomic cultivar “Flor demayo” were ground and dehulled to obtain grits and then extruded at different temperatures (140, 160 and 180 °C) and moisture contents (17, 20 and 23%), according to a bifactorial experimental design. Degree of cooking was estimated by water solubility (WS) and specific mechanical energy (SME). The effect of variables on WS and SME were analysed by surface response methodology. Flour dispersion viscosity and mineral availability (estimated by *in vitro* dialyzability), were also evaluated on selected samples. Results showed that, within the ranges of the variables used for this study, only the effect of temperature was significant on the degree of cooking. No direct correlation was observed between water solubility and SME, although a maximum value of WS corresponded to a range of SME values of 400–500 J/g was observed. Dispersion viscosity decreases as WS increases, so if high calorie density is desired, for instance in order to produce a cream soup formula, bean grits should be extruded at high temperature and as low moisture as possible, in our case 180 °C and 17% moisture. On the other hand, the effects of extrusion variables on iron and zinc dialyzability were not much affected.

**Key words:** Bean flour, Dialyzability, Extrusion, Functional properties, Mineral availability