Conversion of isoflavone glucosides to aglycones in whole soybean flour thermally treated and with endogenous β-glucosidase of soybean

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The β-glucosidase hydrolyze isoflavone glucosides releasing aglycones. Its application in the food industry is relevant to the production of soybean foods with higher levels of isoflavone aglycones, with benefits for human health. The objective of this study was to apply endogenous β-glucosidase of soybean in whole soybean flour (WSF) and evaluate the conversion of isoflavone glucosides to aglycones. The β-glucosidase was fractionated by 40-85% ammonium sulfate saturation, concentrated by ultrafiltration (MWCO 100 kDa) and was applied in WSF thermally treated under different conditions. WSF without heat treatment and without application of enzyme was used as control (WSF_C). Thermal pretreatment was performed in WSF_C for 1h at 100°C (WSF_{100}) or autoclaved for 30min at 121°C (WSF_{121}). In these treatments were added 10U or 50U of β-glucosidase and incubated at 30°C for 2 or 6h. The aglycones content was determined by HPLC and the results were expressed as µg g^{-1} of samples. Thermal pretreatment increased the aglycone content of WSF_{100} and WSF_{121} in 2.6 and 2.8 times, respectively, relative to WSF_C. The application of 50U of β-glucosidase for 6h at 30°C in and CSF_{100} and CSF_{121} increased aglycones content of 7.1 and 8.5 times, respectively, relative to WSF_C. The β-glucosidase was efficient in the conversion of isoflavone glucosides to aglycones in all treatments compared with the control.