

EVALUATION OF THE FATE OF ALLERGENS IN SOY SLURRY SUBJECTED TO INTENSE THERMAL PROCESSING



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ABSTRACT

The effect of intense thermal processing on the fate of selected soybean allergens like β - Conglycinin and Glycinin in soy slurry will be investigated in this study.

- Processing conditions will include three temperatures (110°C, 115°C, and 120°C) and three severe processing times.
- The thermal effect on soy allergens will be evaluated using conventional ELISA and more sophisticated LC-MS techniques and comparative results will be presented.

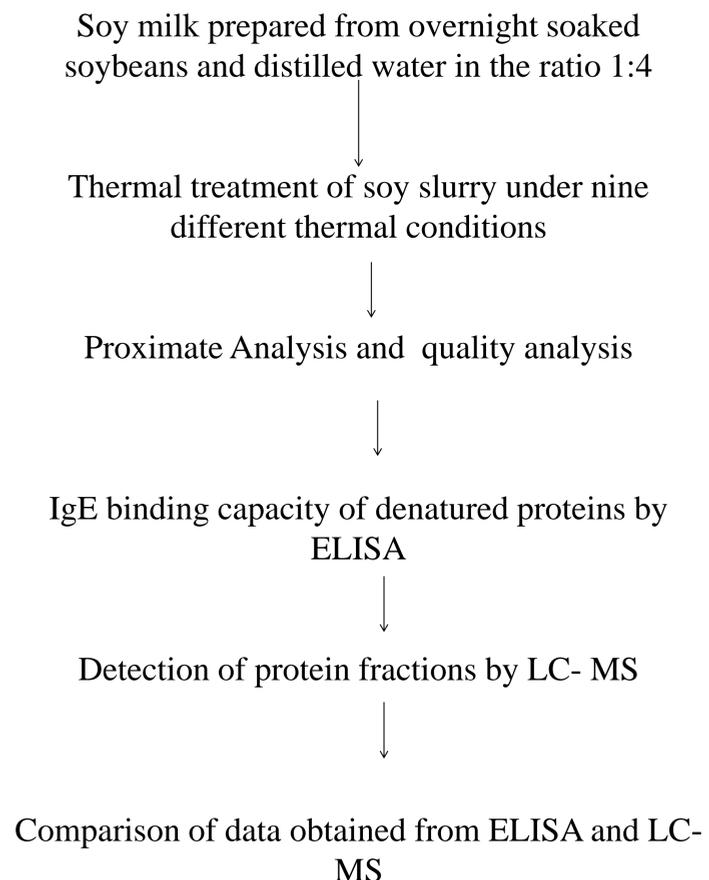
INTRODUCTION

Soy is one of the top eight food products causing allergies.. Thermal processing being the conventional method for the treatment of allergens in food are found to be economically and effective. Here the use of Instant pot helps in achieving the thermal conditions and further these samples are analyzed for the presence of allergens by ELISA and LC-MS

OBJECTIVES

- Intense thermal treatment of soy slurry using instant pot at 110 °C, 115 °C and 120 °C at three different temperatures and detection of soy allergens using ELISA and LC-MS
- Comparison of detection capacity of ELISA and LC- MS for the intense thermally processed soy slurries

METHODOLOGY



CONCLUSIONS

The overall color quality of the soy milk sample was found to be slightly affected by the increase in processing severity conditions. pH was also mildly affected. Further analysis of samples using ELISA technique is expected to provide data on allergen reduction. It is unfortunate that experiments had to be halted in the middle of the study due to COVID 19.

Soy milk Sample	L*	a*	b*-0.32	pH
Untreated sample	20.72	- 0.68	2.36	7. 12
120°C at 15 min	16.72	0.33	0.33	7.12
120°C at 30 min	16.79	0.32	0.43	7.10
120°C at 45 min	10.53	-0.82	5.61	7.05
115°C at 30 min	9.32	-0.050	5.42	7.13
115°C at 45 min	8.35	-0.020	5.7	7.11
115°C at 60 min	7.92	-0.060	5.8	6.94
110 °C at 60 min	7.8	-0.39	5.98	7.10
110°C at 90 min	6.24	-0.44	6.07	7.08
110°C at 120 mins	6.53	-0.32	6.17	6.95

RESULTS AND DISCUSSION

Quality parameters like color and pH was evaluated and they are shown in the Table. The pH values are found to decrease slightly with increase in heat treatment for each time and temperature condition.

Color parameters were found to moderately change with an increase in severity of heating time and temperature (15-120 min; 100 to 120 C demonstrating only moderate influence on product quality (good news)

Evaluation of other quality parameters and more importantly the allergen reduction could not be completed due to the lockdown situation imposed by COVID-19 restrictions. Analyses is underway and expected to provide meaningful reduction soy allergens.

Reference: Boye, J. I & Hocine, L. L. (2007). "Allergenicity of Soybean: New developments in identification of allergenic proteins, cross-reactivities and hypoallergenization technologies", Critical Reviews in Food Science and Nutrition, 47: 127 -143.