



Deutscher Tropentag, October 11-13, 2005, Hohenheim

“The Global Food & Product Chain—  
Dynamics, Innovations, Conflicts, Strategies”

## Effect of Radio Frequency Technique on Nutrient Quality and Destruction of Trypsin Inhibitor in Soybean

THERDCHAI VEARASILP<sup>1</sup>, WATCHARA LAENOI<sup>1</sup>, SUCHADA VEARASILP<sup>2</sup>, NATTASAK  
KRITTIGAMAS<sup>3</sup>, WOLFGANG LÜCKE<sup>3</sup>, ELKE PAWELZIK<sup>4</sup>, UDO TER MEULEN<sup>5</sup>

<sup>1</sup>Chiang Mai University, Department of Animal Science, Thailand

<sup>2</sup>Chiang Mai University, Department of Agronomy, Thailand

<sup>3</sup>Georg-August-University Göttingen, Institute of Agricultural Technology, Germany

<sup>4</sup>Georg-August-University Göttingen, Institute of Agricultural Chemistry, Germany

<sup>5</sup>Georg-August-University Göttingen, Institute of Animal Physiology and Nutrition, Germany

### Abstract

Several heating methods are used in practice to destroy trypsin inhibitor in order to improve nutritive value of soybean which is a major source of protein in animal feed. This experiment was conducted to investigate the effect of radio frequency technique, a dielectric heating, on nutrient quality and destruction of trypsin inhibitor in soybean. Soybean used in this study was ChiangMai 60 variety. Six groups of the soybean were irradiated with radio frequency at 27.12 MHz. The defined target temperatures were 80 °C, 100 °C and 120 °C and holding on constant for defined processing time 90 and 180 seconds. The results of chemical analysis showed that untreated soybean contained ash, crude protein, ether extract, crude fibre, and nitrogen free extract 5.23, 37.60, 18.92, 6.15 and 23.32 % DM respectively. The chemical composition of untreated soybean was similar to those of the soybean treated with radio frequency. Thus, radio frequency had no effect on chemical composition of the soybean. All soybean samples had similar amount of acid value which indicated that radio frequency did not affect oil quality of the soybean. The result of trypsin inhibitor analysis showed that raw soybean contained 28.75 mg trypsin inhibitor (TIU) which was higher than those of radio frequency treatment at 80 °C, 100 °C and 120 °C at 90 and 120 seconds (9.70, 9.59, 8.98 and 8.80, 8.42, 7.88 TIU mg<sup>-1</sup> respectively). Increasing of the temperature and processing time resulted in decreasing trypsin inhibitor. It can be concluded that radio frequency may introduce a new aspect in feed processing technique to improve nutrient quality of soybean by destruction of trypsin inhibitor without adverse effect on other nutrients composition.

**Keywords:** Acid value, chemical composition, radio frequency, soybean, trypsin inhibitor