

Pipatpong Chundang 2010: Protein Digestibility Improvement of *Jatropha curcas* Press Cake by Gamma Irradiation. Master of Science (Applied Radiation and Isotopes), Major Field: Applied Radiation and Isotopes, Department of Applied Radiation and Isotopes. Thesis Advisor: Assistant Professor Wanwisa Sudprasert, Ph.D. 95 pages.

The study was conducted to investigate the effect of gamma radiation on protein digestibility of *Jatropha curcas* press cake using *in vitro* digestibility technique. Five varieties of *Jatropha curcas* seeds, i.e., KU BP-16, KU BP-20, KU BP-27, KU BP 78-9 and KU BP 80-3, were subjected to Cobolt-60 gamma radiation at 0, 10, 20, 30, 60 and 100 kGy. All treated seeds were defatted by screw press. *In vitro* protein digestibilities in defatted seeds were assayed using trinitrobenzene sulphonic acid (TNBS) method, by which the contents of alpha-amino induced from the function of enzymes were determined. The absorbance of yellow products generated from the reaction of primary amine and TNBS was obtained at the maximum wavelength of 420 nm. It was found that irradiation treatment at 60 kGy significantly increased the protein digestibility by 15-92 %, compared to controls or 0 kGy ($P < 0.05$). The results showed that moisture, crude protein, fat and ash were unchanged by irradiation whereas fiber was significantly decreased at 60 kGy radiation. The relationship between trypsin inhibitor activity and protein digestibility of irradiated *Jatropha curcas* press cake (KU BP-16 and KU BP-20) was studied. It was found that the protein digestibility was negatively correlated with trypsin inhibitor activity for all doses studied. Therefore, irradiation could serve as a possible processing method for protein utilization improvement in defatted *Jatropha curcas* seeds before using as a protein supplement in animal feed.

Student's signature

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