

O084 **Effects of heat damage on the nutritional composition and on the amino acid digestibility of canola meal, sunflower meal, and cottonseed meal fed to pigs.** F. N. Almeida^{1,*}, J. K. Htoo², J. Thomson³, H. H. Stein¹, ¹*Animal Sciences, University of Illinois, Urbana*, ²*Evonik Industries AG, Hanau, Germany*, ³*Evonik Degussa Corporation, Kennesaw*.

Three experiments were conducted to determine the effects of heat damage, achieved by autoclaving, on the nutritional composition and on the standardized ileal digestibility (SID) of AA in canola meal (CM), sunflower meal (SFM), and cottonseed meal (CSM) fed to growing pigs. The second objective was to develop regression equations that may be used to predict the concentration of SID AA in CM, SFM, and CSM from their nutritional composition. In Exp. 1, the SID of Lys was reduced (quadratic, $P < 0.05$) from 70.7 to 26.5% in CM that was not autoclaved or CM autoclaved for 45 min at 130°C, respectively. The concentration of SID Lys in CM may be best predicted by an equation that includes the concentrations of lignin, acid detergent insoluble N (ADIN), and reducing sugars in the model ($r^2 = 0.97$). In Exp. 2, the SID of Lys in SFM was reduced (linear, $P < 0.05$) from 83.2 to 63.5% in SFM that was not autoclaved or SFM autoclaved for 60 min at 130°C, respectively. The concentrations of Lys and reducing sugars in SFM may be used as good predictors ($r^2 = 0.86$) for the concentration of SID Lys in SFM. In Exp. 3, the SID of Lys in CSM was higher ($P < 0.05$) in CSM that was not autoclaved (66.2%) than in autoclaved (60 min at 130°C) CSM (54.1%). The equation ($r^2 = 0.68$) that best predicted the concentration of SID Lys in CSM includes the concentrations ADIN. In all 3 exp., the SID of most AA was reduced (linear or quadratic, $P < 0.05$) as a result of heat damage. In conclusion, heat damage reduces the SID of AA in CM, SFM, and CSM, and the concentration of SID Lys in these ingredients may be accurately predicted from the concentrations of lignin, ADIN, reducing sugars, and AA, separately or in combination.

Key Words: amino acids, digestibility, heat damage