

Effect of roasting on ruminal degradation, intestinal digestibility and absorbable amino acid profile of cottonseed and soybean oilcake meals

G.E. Schroeder*, L.J. Erasmus, K-J. Leeuw and H.H. Meissner¹

Animal Nutrition and Animal Products Institute, Private Bag X2, Irene, 1675 Republic of South Africa

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The effect of heat processing on ruminal degradation, intestinal digestibility (UDP-D) and absorbable amino acid (AA) profile of cottonseed oilcake (CSOC) and soybean oilcake (SBOC) was calculated. CSOC and SBOC were roasted in a drum roaster at six temperature settings and five time intervals resulting in 30 treatments per feedstuff. Percentage acid detergent insoluble nitrogen (% ADIN) was used as a screening test. Ruminal protein degradation and UDP-D were measured with the *in situ* polyester and mobile bag techniques (MBT), respectively. Temperature and time altered ($P < 0.05$) crude protein (CP) disappearance from the rumen and total tract, as well as UDP-D. The % ADIN and the theoretical amount of AA available increased, whereas effective ruminal protein degradability decreased with temperature and time. The relationship between total N disappearance and % ADIN ($R^2 = 0.99$) for CSOC was non-linear ($P < 0.05$); for SBOC it was linear ($P < 0.05$) ($R^2 = 0.85$). The relationship between UDP-D and % ADIN ($R^2 = 0.99$) for CSOC was non-linear ($P < 0.05$); for SBOC it was linear ($P < 0.05$) ($R^2 = 0.86$). Heat processing decreased ($P < 0.05$) Lys in both CSOC and SBOC. The AA Thr, Pro and Gly in CSOC and Thr, Val, Leu, His, Asp, Gly and Ala in SBOC, were more ($P < 0.05$) resistant to rumen degradation; more Thr and Lys ($P < 0.05$) were absorbable in both CSOC and SBOC, when compared to the control. CSOC and SBOC should be treated at 150 °C/40 min and 130 °C/45 min respectively.

Die invloed van hitteprosessering op rumenproteïendegradeerbaarheid, nie-degradeerbare proteïenverteerbaarheid (UDP-V) en absorbeerbare aminosuurprofiel (AS) van sowel katoensaad- (KSOK) as soja-oliekoek (SOK) is bepaal. KSOK en SOK is in 'n dromrooster gerooster by ses temperature met vyf tydintervalle. Persentasie suuronoplosbare stikstof (% ADIN) is as 'n siftingstoets gebruik. Die *in situ* poliëster en mobiele sakkie-tegnieke (MBT) is gebruik om die effektiewe rumenproteïendegradeerbaarheid en UDP-V, respektiewelik, te bepaal. Verskille ($P < 0.05$) is verkry in die ru-proteïen verdwyning uit die rumen en totale spysverteringskanaal, asook in die UDP-V. Die % ADIN en die teoretiese hoeveelheid AS beskikbaar het toegeneem, terwyl die effektiewe rumen-proteïendegradeerbaarheid met temperatuur en tyd afgeneem het. Die verwantskap tussen totale N verdwyning en % ADIN ($R^2 = 0.99$) vir KSOK was nie-liniêr ($P < 0.05$) en liniêr ($P < 0.05$) ($R^2 = 0.85$) vir SOK. Die verwantskap tussen UDP-V en % ADIN ($R^2 = 0.99$) vir KSOK was nie-liniêr ($P < 0.05$) en liniêr ($P < 0.05$) ($R^2 = 0.86$) vir SOK. Hiteprosessering het Lis in sowel KSOK as SOK verlaag ($P < 0.05$). Die AA Tre, Pro en Gli in KSOK en Tre, Val, Leu, His, Asp, Gli en Ala in SOK was meer ($P < 0.05$) weerstandbiedend teen rumendegradering, teenoor Tre en Lis wat meer ($P < 0.05$) absorbeerbaar was in sowel KSOK as SOK, in vergelyking met die kontrole. Daar word aanbeveel dat KSOK en SOK teen respektiewelik 150 °C/40 min en 130 °C/45 min behandel word.

Keywords: Dairy cows, heat processing, amino acid flow, digestion, cottonseed oilcake, soybean oilcake.

* Author to whom correspondence should be addressed

¹ Formerly from: Department of Animal and Wildlife Sciences, University of Pretoria, Pretoria, 0002 Republic of South Africa