

Reactive lysine in distillers dried grains and distillers dried grains with solubles measured with the homoarginine or the furosine procedure

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The objective of this study was to measure the concentration of reactive Lys in 36 samples of distillers dried grains with solubles (DDGS) and in 1 sample of distillers dried grain (DDG) using the homoarginine procedure and the furosine procedure. The standardized ileal digestibility (SID) of Lys in these samples had previously been measured using growing pigs. The homoarginine procedure allows for a direct measurement of reactive Lys by converting all reactive Lys in the sample to homoarginine via guanidination with O-methylisourea. The homoarginine concentration in each sample can then be directly measured. The furosine procedure on the other hand measures the concentration of furosine in each sample, which allows for the calculation of the un-reactive (blocked) Lys in the samples. By subtracting the amount of un-reactive Lys from the total Lys in the sample, the concentration of reactive Lys is calculated. Results of the experiment showed that the concentration of reactive Lys was 74.5% of the total Lys in the samples if the homoarginine procedure was used and 82.5% if the furosine procedure was used. Therefore, the amount of un-reactive Lys in the samples was calculated as 25.5 and 17.5%, respectively, by the homoarginine and the furosine procedures. This indicates that a relatively large proportion of the Lys in DDGS and DDG has been heat-damaged during drying of the samples. The values for reactive Lys were correlated with the concentrations of SID Lys in the samples. The results of these analyses indicated that reactive Lys measured by the homoarginine procedure or the furosine procedure was correlated with SID Lys with reasonable accuracy ($r^2 = 0.69$ and 0.65 , respectively; $P < 0.01$). It is concluded that some of the Lys in DDGS and DDG is un-reactive and that the concentrations of un-reactive and reactive Lys in the samples may be measured using either the homoarginine or the furosine procedure.

Key words: furosine, homoarginine, reactive Lys