

Table. Determined digestibility of four different batches of wheat distillers dried grains with solubles on total (TAA) indispensable (IAA), dispensable (DAA) amino acid digestibility, apparent metabolisable energy (AME), nitrogen retention (NR) and fat digestibility (FD), when fed to laying hens

Treatment	TAA	IAA	DAA	AME (MJ/kg DM)	NR	FD
DDGS 1	0.603	0.607	0.599	12.41	0.599	0.653
DDGS 2	0.669	0.673	0.664	12.51	0.618	0.645
DDGS 3	0.640	0.643	0.636	12.47	0.598	0.653
DDGS 4	0.617	0.622	0.609	11.93	0.549	0.689
SEM	0.0168	0.0171	0.0166	0.105	0.0083	0.0090
DDGS inclusion rate 15%	0.645	0.651	0.637	12.40	0.632	0.649
DDGS inclusion rate 30%	0.619	0.621	0.617	12.27	0.549	0.671
SEM	0.0119	0.0121	0.0117	0.075	0.0059	0.0064
Significance, <i>P</i> <						
Batches	0.049	0.058	0.042	0.001	<.001	0.007
Inclusion rate	0.140	0.092	0.237	0.234	<.001	0.020
Batch * inclusion	0.232	0.153	0.378	0.459	0.513	0.992

different wheat DDGS batches produced by a single production plant may vary when fed to poultry. Results also indicate that the addition of wheat DDGS to conventional poultry feeds, such as soybean meal, will reduce protein digestibility.

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Composition and ileal digestibility of amino acids in the starch concentrate of dehulled faba bean (*Vicia faba*)

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IMPLICATIONS

In view of its amino acid content and digestibility, bean starch concentrate may partly replace soya bean meal in broiler diets.

INTRODUCTION

Air fractionation is a simple processing technique that separates light and heavy particles in powdered legumes using air stream (Vose *et al.*, 1976). Air fractionation of faba bean (*Vicia faba*) produces both protein and starch concentrates as co-products. The bean starch concentrate (BSC) contains approximately 20% crude protein (CP) and may be used as an alternative diet ingredient for non-ruminants. However, there is no information on the digestibility of the amino acids (AA) in BSC for poultry. Therefore, the current experiment was designed to determine ileal AA digestibility of BSC for broilers.

MATERIALS AND METHODS

Ninety-six birds at 28 days old were used for the experiment. The birds received nutrient-adequate maize-soybean meal diet from day old. On day 22 of age, the birds were allocated to either a purified nitrogen-free diet or a semi-purified diet (16% protein) in which BSC was the only protein source. Ileal digesta were collected on day 28 for determination of CP, AA and titanium (digestibility marker). Coefficients of apparent ileal digestibility (cAIAAD) values for AA were corrected for basal endogenous AA losses to calculate coefficients of standardised digestibility (cSIAAD).

RESULTS

The BSC tested contained 16.8% CP whilst its AA composition ranged from 0.12% for Met to 3.05% for Glu. The cAIAAD and cSIAAD values were very similar for most AA and the average

Table. Coefficients of digestibility and content of total and digestible amino acids (DM) in bean starch concentrate for broilers

Diet	Indispensable amino acids								
	Arg	His	Ile	Leu	Lys	Met	Phe	Thr	Val
Composition, %	1.67	0.45	0.80	1.37	1.13	0.12	0.76	0.58	0.85
cAIAAD	0.90	0.85	0.83	0.84	0.87	0.68	0.83	0.76	0.84
cSIAAD	0.91	0.86	0.84	0.85	0.88	0.70	0.84	0.78	0.85
SDAA/CP, %	3.47	0.88	1.52	2.66	2.27	0.20	1.47	1.04	1.66
Diet	Dispensable amino acids								
	Ala	Asp	Cys	Glu	Gly	Pro	Ser	Tyr	
Composition, %	0.77	2.02	0.22	3.05	0.80	0.62	0.73	0.64	
cAIAAD	0.83	0.87	0.78	0.89	0.81	0.79	0.81	0.82	
cSIAAD	0.84	0.87	0.79	0.90	0.82	0.81	0.82	0.83	
SDAA/CP, %	1.49	4.03	0.40	6.25	2.27	1.14	1.36	1.21	

SDAA – standardised digestible amino acid.

cAIAAD and cSIAAD were 0.82 and 0.83, respectively. The cAIAAD and cSIAAD were lowest for Met (0.68 and 0.70, respectively) and highest for Arg (0.90 and 0.91, respectively). With the exception of Met and Thr, the digestibility of AA in the current study was higher than or similar to that determined in broilers for conventional faba beans (Woyengo and Nyachoti, 2012) or hull-less faba bean (Gous, 2011). The inclusion of BSC may contribute significant amounts of protein and AA in view of its relatively high AA content (compared with faba bean) and digestibility. The absence of hulls in the product, its large surface area and the lack of heat application in the bean processing steps may have been responsible for its generally high AA digestibility, especially of Lys.

CONCLUSION

The composition and digestibility of amino acids in BSC indicate that it is a promising ingredient in broiler diets. The low Met level and digestibility as

well as comparatively lower SDAA per unit of CP, especially of the sulphur-AA, may limit how much soya bean meal can be replaced though its strategic use in combination with crystalline AA supplementation will make it a promising ingredient that can be used in poultry diets.

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Identification of novel genomic variations associated with blood and muscle calcium levels in chicken

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IMPLICATIONS

It is very likely that the SNP set identified in this research will be incorporated into the available SNP chips for chicken. The individual SNPs explained a substantial proportion of the phenotypic variance, and have the potential to assist

poultry breeders in selecting elite birds with better muscle and meat quality attributes.

INTRODUCTION

Genetic selection has resulted in higher body mass and muscle size several fold greater in