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Fractionation of rapeseed meal by milling, sieving and air classification – Effect on crude protein, amino acids and fiber content and digestibility

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Highlights

- Ball milling of rapeseed meal (RSM) in combination with sieving improved separation of hulls and kernel compared to jet milling and air classification.
- Air classification of pre-sieved RSM had minor effect on crude protein (CP) and fiber levels, indicating a limited potential to further increase CP content after previous partial removal of hulls.
- Total tract apparent digestibility (CTTAD) of amino acids and CP decreased with increasing hull content in RSM.

Abstract

Rapeseed meal (RSM), obtained as solvent extracted or expeller meal, is a feed commodity that is highly available. The high levels of fiber is a bottleneck for high inclusion in feed for monogastric farmed animals. In the present study, sieving and air classification were used to reduce fiber content in rapeseed products. The two first experiments unveiled the possibility to air classify rapeseed products with lipid content ranging from 20 to 160 g/kg, and to obtain fractions where crude protein (CP) content was increased from 325 to 376 g/kg and neutral detergent fiber (aNDFom) was reduced from 185 to 78 g/kg. Experiment 3 showed that ball milling of RSM in combination with sieving gave high separation of hulls and kernel. In the finest sieved fraction (0-150 µm), CP was increased from 336 (parent meal) to 394 g/kg with a fraction yield of 423 g/kg. Air classification of pre-sieved RSM had minor effect on CP and fiber levels, indicating a limited potential to further increase CP content when the hulls have partly