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Chemical composition and nutritional characteristics of rapeseed meal produced in France

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Chemical composition of rapeseed meal produced in the French crushing factories is monitored with a quality survey since 2003. In the context of the biodiesel production, the rapeseed meal (RSM) availability in France reached 2.5 million tons in 2017 (increasing by 25 % from 2010), while national rapeseed meal consumption was 2.4 million tons. Rapeseed meal production contributes significantly to protein autonomy in France and this survey is an important evaluation tool, useful for its value-enhancing in animal feeding.

Each month, one sample of rapeseed meal, from each French crushing factory, is analyzed. The measured characteristics are: dry matter (ISO 771), lipid (ISO 22630), protein (ISO 5983-2), crude fiber (NF V 03-040), glucosinolates (NF ISO 10633-1), calcium and phosphorus contents, protein solubility in potash 0,1% (internal method equivalent to ISO 14244), enzymatic digestibility DE1 (1 hour, Aufrère method 1989).

For 2012-2017 period, mean yearly results were: dry matter from 88,2% to 88,6% , lipid content from 2,5% to 2,8% of Raw Matter standardized at 12% moisture (RM12), protein content from 33,0% to 34,1% (RM12), crude fiber content from 13,2% to 14,3% (RM12), glucosinolates content from 7,0 to 8,8 $\mu\text{mol/g}$ (RM12), protein solubility from 45,6 to 47,7%, DE1 from 19,8% to 24,1%, Ca content from 7,43 to 8,71 g/kg (RM12) and P content from 10,9 to 12,0 g/kg (RM12).

The first four characteristics were relatively stable over the years and among factories. Moreover, these values were close to references used by feeding industry. Meal samples obtained from erucic varieties showed higher protein content (35,3 to 37,2%). Glucosinolates content, protein solubility and DE1 values were much more variable (standard deviations of 4-5 $\mu\text{mol/g}$ and 6,4-7,9%) with a strong factory effect, mainly explained by applied processes.

In 2017, glucosinolates contents ranged from 4,5 to 17 $\mu\text{mol/g}$ (RM12) according to factories. Differences were also noticed according to seed origins (national production, import) for glucosinolates and protein contents. Rapeseed meal samples obtained from Canadian canola seeds were characterised by higher protein and lower glucosinolates contents. These observations are interesting for further experiments on interest of different meal characteristics for animal feeding.

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