

CHEMICAL COMPOSITION AND NUTRITIONAL VALUE OF HEAT-TREATED AND COLD-PRESSED RAPESEED CAKE

Helgi Kaldmäe, Ragnar Leming, Marko Kass, Aleksander Lember, Silvi Tõlp, Olav Kärt
*Institute of Veterinary Medicine and Animal Sciences, Estonian University of Life Sciences,
1 Kreutzwaldi St., 51014 Tartu, Estonia
Phone: 372 7 313 473, Fax 372 7 313 477, e-mail: helgi.kaldmae@emu.ee*

Summary. Chemical composition of locally-produced heat-treated rapeseed cake (n=103) and cold-pressed (n=40) rapeseed cake was evaluated. Cold-pressed rapeseed cake (CPRC) was produced at a temperature 60-70°C and the heat-treated rapeseed cake (HTRC) was processed at 100 °C for 20-25 minutes. CPRC contained less crude protein than HTRC (332 g/kg vs. 363 g/kg) and fewer N-free extracts (282 g/kg and 320 g/kg), but more crude fat (158 g/kg and 111 g/kg), with a higher metabolizable energy content for ruminants (13.9 MJ/kg and 13.0 MJ/kg) and for pigs (15.2 MJ/kg and 14.6 MJ/kg, respectively). Heat treatment decreased glucosinolate concentrations in rapeseed and rapeseed cake – the content of hydroxyglucobrassicin was reduced by 72% and that of glucobrassicin by 75%.

Heat treatment had no effect on organic matter digestibility in pigs.

Ruminal degradability of HTRC protein was slow. Protein solubility of HTRC (fraction A) was 31.0%, while that of CPRC was 70.2%; effective degradability was 53.4% and 89.2%, respectively.

It is concluded that heat treatment of rapeseed improves the protein quality of rapeseed cake.

Keywords: cold-pressed rapeseed cake, heat-treated rapeseed cake, chemical composition, glucosinolates, metabolizable protein, degradability.