

Peptidomic profile of in vitro digested hemp-based products and their effect on intestinal epithelial cells

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In the last decade, attention in hemp-based products (*Cannabis sativa* L.) has increased. Among these, hempseed (HS) has gained interest from the feed and food sector due to high nutritional quality and bioactivity. In line of that, the aim of the present study was to determine the total phenolic content (TPC), antioxidant (ABTS, FRAP, ORAC) and ACE-inhibitory activity (ACE-IC) of in vitro digested HS and HS protein (HP), in relation to flaxseed (FX), largely used in the food/feed sector. In parallel, the peptidomic analysis and antioxidant effect of HS and HP on intestinal epithelial cells were investigated. The data (mean±SEM) were analysed by one-way Anova and considered statistically significant for a 95% confidence interval ($p<0.05$). The results showed that the TPC of HP (1544.8±96.2mg Tannic acid equivalent (TAE)/100g) was significantly higher ($p<0.05$) than HS (846.2±23.8mg TAE/100g) and FX (451.5±59.3mg TAE/100g). This trend was also confirmed for ACE-IC and ABTS (3936.8±59.3; 2386.6±117.9; 1334.5±43.6 mg Trolox equivalent (TE)/100 g, for HP, HS and FX, respectively). Most probably these positive effects are due to the bioactive peptides resulting from the hydrolysis of the main proteins with ACE-IC (eukaryotic translation initiation factor 6-2) and antioxidant (wall-associated receptor kinase-like 1) activity of HS and HP. These results encourage further investigation on the bioefficacy of HSs and HPs, to identify the best level of inclusion to ensure high performance and animal welfare.

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