

Hemp-based products as functional and sustainable ingredient for feed and food applications

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The environmental impact of the food and feed sector and their direct competition are highly debated topics. This scenario is bound to get worse considering the increase of world population. For this, scientific research is investigating new matrices featured by both a high nutritional profile and a low ecological impact. Among them, hemp (*Cannabis sativa* L.) is an excellent candidate due to its important role in environmental health and its relevant nutritional and functional aspects, still little studied. In light of the above, the aim of this presentation will be to explore the use of hempseeds (HS) and hemp co-products (HCPs) (hulls, flowers, leaves and HS panel) as valuable resources for the food and feed sector. Specifically, hemp matrices were in vitro and ex vivo digested to investigate their antioxidant profile, phenolic content and the presence of bioactive peptides. In parallel, a HCP (mix of hulls, leaves and non-standardised HSs) was included in the diet of laying hens to evaluate the effect on health, animal performance and nutritional and functional profile of the eggs. Hempseeds in vitro digested showed a valuable peptidomic profile. Precisely, the MS/MS approach identified peptides with antioxidant, ace-inhibitory, anticancer, antibacterial, antifungal, antihypertensive and DPP-IV inhibitory activities. At the same time, HCP have proven to be matrices with an interesting nutritional and functional profile, but highly variable depending on the production processing. Although this represents a critical point, the inclusion of the HCP up to 9% in the diets of laying hens preserved animal health and increased the nutritional (e.g. lower saturated fatty acid and cholesterol content) and functional (e.g. higher content of vitamins and antioxidant molecules) profile of animal product. Although what has been presented supports the use of hemp-based products in the food and feed sector, future studies will be needed to ensure their increasing use.