packaging material in feed, expressed as w/w in the case of the stereomicroscopic method and as a colour spectrum representing the proportion of each colour on the FFP surface, within a fixed scale of 4096 colours, in the case of computer vision system (CVS). The visual pattern recorded for each sample with CVS was processed using Statistical Quality Control (SQC) model. The stereomicroscopy approach revealed that the contamination level was below to 0.08% (w/w), within the tolerance level established by BMELV. Of note, the packaging remnants were observed mainly from the 1-millimeter sieve mesh fractions. Computer vision system, through the SQC model, revealed the possibility to rapidly detect the presence of packaging remnants in FFPs when combined with stereo-microscope. Concluding, even though the validated method (RIKILT) remain the most assured for detection and quantification of packaging materials in FFPs, it results laborious and ineffective regarding the smallest packaging remnants. In comparison, the use of CVS coupled with stereomicroscopy has shown a big potential in a rapid qualitative analysis also in low contaminated ex-food and could be considered effective in defining further analysis or investigations in FFP.

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Camelina cake in laying hens diet to enrich eggs with omega-3 fatty acids

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The aim of the trial was to evaluate the inclusion of 7.5% of camelina cake in the diet of laying hens on performance, egg quality characteristics, fatty acids composition and lipid oxidative stability. Thirty-two 26-weeks old Hy-Line Brown laying hens coming from the same flock were divided in two homogenous groups and allocated in enriched cages (8 replicates per treatment) at the Experimental Station (Centro Zootecnico Didattico Sperimentale) of the University of Milan in Lodi. After an adaptation week, the trial lasted 8 weeks. Diets were formulated to meet requirements suggested for the genetic line and were isoproteic and isoenergetic. Performance were recorded weekly and two eggs per replicate were sampled on day 0, 28 and 56 of the trial. On the same samples, two yolks per replicate were pooled for fatty acid composition. Samples of two eggs per replicate were also collected at the end of the trial to evaluate egg quality characteristics and oxidative stability during egg shelf life (day 9, 21 and 28 from laying); for this aim, pooled yolk were analyzed

for TBARS content. Data were analyzed by MIXED procedure by SAS. No differences were observed for hens' body weights and eggs production during the trial, whereas feed intake and feed efficiency, expressed as feed intake over egg weight yield, were lower at week 6 and overall the experiment, respectively. No differences were detected for egg quality characteristics between treatments. Dietary camelina reduced by 3.5% saturated fatty acids and increased by 49% α-linolenic acid in egg yolk. No differences between treatments were evidenced for quality of eggs and TBARS yolk content during eggs shelf life. Inclusion of 7.5% of camelina cake in laying hens' diets could reduce production costs and increase nutritional properties of eggs.

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Dietary administration of olive mill wastewater extract to improve broiler performance and oxidative status in chicken meat

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Olive oil extraction generates high amounts of by-products considered as potential pollutants. By-products are treated as industrial wastes or combustible material, heavy-metal absorbers and biofuel feedstock. One important alternative, considering the relatively high content in polyphenols, is the use of by-products from the olive oil industry as sources of nutrients for animals.
An olive mill wastewater polyphenols extract (OPE), obtained from aqueous waste through the use of a filtration system with progressive permeability membranes, was used as a supplement in a grower diet fed to broilers from 22 to 49 days of