**Evaluation of the difference in contamination by per- and poly-fluorinated substances (PFASs) in wild boar and swine tissues sampled in the same area.**

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**Introduction:** Wild boars are considered bioindicators of environmental pollution since they can be easily exposed to persistent organic contaminants through the oral route. Domestic pigs belong to the same *Sus scrofa* species and may present the same exposure route and accumulation patterns for many xenobiotics, including per and poly-fluorinated alkyl substances (PFASs). Due to their physico-chemical properties, PFASs own high thermal, chemical, and biological inertness and resist natural degradation. These special characteristics give them the epithet of “forever chemicals” and exposure to PFASs may lead to disruption of endocrine functions and cause mutagenic and carcinogenic effects. Due to these adverse effects on animal and human health, monitoring the presence of PFASs in the environment only may be not sufficient to determine the real exposure of the biota and biomonitoring could be more useful. This study aimed to quantify PFASs concentrations in muscle and liver from hunted wild boars and swine bred in a semi-extensive way in a specific area of Northern Italy.

**Materials and Methods:** Muscle and liver samples from 20 wild boars, killed during the hunting activity, and from 20 slaughtered swine were collected. The detected substances were the two legacy PFOA and PFOS and the emerging compounds PFBS and NEtFOSAA. After extraction, the compounds were quantified using an intra-laboratory validated UPLC-HRMS method. For statistical comparison, animals were grouped according to species.

**Results and Discussion:** All compounds were detected in all samples, except NEtFOSAA which resulted in traces in all swine liver. PFOA content resulted statistically higher in wild boar liver than swine with a mean concentration of 18.85 ± 5.41 $\mu g \cdot kg^{-1}$ and 12.7 ± 6.34 $\mu g \cdot kg^{-1}$ respectively. NEtFOSAA resulted significantly higher in wild boar liver with mean concentrations 14.61 ± 23.34 $\mu g \cdot kg^{-1}$ and detected in traces in swine liver. No differences in muscle concentration for all PFASs were identified in wild boar compared to swine but a trend of higher content of all substances was observed. The overall higher content of PFASs in liver and muscle from wild boar could be attributable to different patterns of accumulation, related to the different attitudes of these animals, stronger bound to the natural environment and the agricultural activity and with a longer lifespan.

**Conclusion:** In conclusion, wild boar resulted more contaminated by these emerging and concerning environmental pollutants and could be used as bioindicator tools to assess their presence in an area, avoiding its use as pasture.