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P86 | Fipronil administration in laying hens: Edible and inedible tissue residue profiles

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Introduction: Fipronil (FIP) is a pyrazole insecticide authorized to control ectoparasites in small animals (worldwide) and cattle (in some countries). Few approved antiparasitic compounds are available for poultry. As consequence, the extra-label use of FIP has been described in this species to control the red mite Dermanyssus gallinae, an ectoparasite that constitutes an important health problem with huge economic repercussions in this production. Since FIP and its fipronil sulfone (FIP-SO2) metabolite residue profiles in eggs after administration to laying hens have been reported, the main goal of the current study was to investigate the FIP and the FIP- SO2 metabolite residues profiles in edible and other tissues after extra-label administration in laying hens.

Materials and Methods: Hens were extra-labeled treated with FIP (ECTOLINE® 1%) in feed and by the topical route. Following animal welfare standards, the animals were slaughtered at different times for a 60-day post-treatment period. Plasma, muscle, liver, kidney, fat, skin, feather, and feces samples were collected and analyzed to quantify FIP and FIP- SO_2 metabolite residues by UFLC-MS/MS.

Results and conclusions: FIP and FIP-SO_2 residues were quantified in all tissues after both administrations to laying-hens. The FIP-SO_2 residues were the highest in most tissues. After oral administration in feed, FIP was quantified mainly in feathers (maximum residue level [C_{max}]) of 0.24 ± 0.16 µg/g at 9 days post-treatment (t_{max}), and fat (C_{max} = 0.49 ± 0.46 µg/g; t_{max} = 6 days). The highest FIP-SO_2 residue profiles were found in fat (C_{max} = 9.9 ± 4.2 µg/g; t_{max} = 15 days), skin (C_{max} = 1.7 ± 0.6 µg/g; t_{max} = 9 days), and liver (C_{max} = 1.1 ± 0.5 µg/g; t_{max} = 6 days). Meanwhile, after topical administration, the highest residues were for FIP in feathers (C_{max} = 17.6 ± 5.3 µg/g) at 5 days post-treatment. High FIP-SO_2 residues were also quantified in feathers (C_{max} = 2.2 ± 1.7 µg/g; t_{max} = 5 days), fat (C_{max} = 1.8 ± 0.8 µg/g; t_{max} = 15 days), and skin (C_{max} = 0.44 ± 0.1 µg/g; t_{max} = 15 days). It is important to consider in poultry production that laying hens that finish their productive period are intended for consumption. These results show that the consumption of edible tissues from treated chickens could have undesirable effects on health. Fortunately, low concentrations were found in muscle. Future studies applying the risk analysis tool will allow us to conclude whether or not there is a possible risk to consumers.

P87 | Antibacterial drug residues in animal tissues for human consumption: Monitoring and exposure assessment

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Introduction: Argentina is traditionally a beef producer country. However, in recent years pork and chicken production have widely grown. These productions are closely linked to veterinary drug use for bacterial control. Accordingly, if good veterinary practices are not followed, food of animal origin could contain drug residues above the *Maximum Residue Limit* (*MRL*). Antibacterial drug residues in animal tissues may induce toxic or allergic reactions and promote antimicrobial resistance with a serious impact on human health. Residue monitoring programs consist of foodstuff sampling to determine potential drug residues. This study aimed to monitor, asses the exposure, and characterize the potential risk of antibacterial residues in animal products for local consumption in Buenos Aires province (Argentina).

Materials and Methods: Antibacterial residues of enrofloxacin (EFX), amoxicillin (AMX), oxytetracycline (OTC), tilmicosin (TIL), and monensin (MON) were monitored in edible tissues from bovine, pork, and chicken species. Based on the Argentinian food culture, the following edible tissues were purchased from supermarkets, butchers, poultry shops, and retail stores in the cities involved in the trial: 360 meat (150 beef, 111 pork, and 89 chicken), 360 fat (150 beef fat, 111 pork fat, and 89 chicken fat), 91 beef liver, 78 beef kidney, and 33 sweetbreads samples. Tissue samples were analyzed by HPLC-fluorescence or UFLC-MS/MS. Considering that the tissues are not consumed raw, based on previously reported data, antibacterial residue stability during conventional cooking methods was contemplated for the analysis. Finally, factors such as antibacterial residue prevalence; residue concentrations; residue stability after different cooking methods; and bovine, pork, and chicken tissue consumption, were modeled by the @Risk software to predict the probability of consuming tissues with residues above the *Admitted Daily Intake*.

Results and Conclusions: EFX, OTC, AMX, TIL, and MON antibacterial residues were found in bovine, pork, and chicken tissues. 9.4% of collected tissue samples had quantifiable drug residue levels and 2.7% had residue concentrations exceeding the MRL out of 922 targeted samples. Taking into account the levels of quantified antibacterial residues, the exposure to them, and the characterization of the risk by the described methodology, it was concluded that these antibacterial residues do not constitute a direct risk to consumers' health. However, the high frequency of antibacterial drug residues at detectable levels found in food should not be ignored, due to their possible contribution to the development of bacterial resistance when ingested and therefore with indirect consequences on health.