Adverse Food Reactions in Humans and Pets: A New Perspective of their Onset

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Adverse food reactions (AFR) can be divided into non-immune-mediated (food intolerance) and immune-mediated (food hypersensitivity) [1]. In fact while the first involve non-immunologic adverse reactions to food and include conditions such as lactase deficiency, dietary protein-induced enterocolitis syndromes and eosinophilic gastrointestinal disease, the second are considered adverse health effects arising from a specific immune response that occurs on exposure to a given food [2]. In fact, food intolerance can occur with diarrhea or vomiting and do not create a typical allergic response. Loss of tolerance to foods leads to induction of type I hypersensitivity reactions, which in turn are influenced by several factors including genetic susceptibility, the nature of antigen, which initiates the disease and challenge with infections and bacteria [3]. Although adverse food reactions may occur after ingestion of any kind of food, potentially allergenic food ingredients are limited in veterinary medicine [1,4]. Unfortunately most of these are often untraceable due to their mixing with other compounds during pet food production [1]. For instance, in vivo studies have interestingly pointed out that foods responsible for cutaneous adverse food reactions onset in pets are beef, dairy products, wheat, lamb, soy, and fish [5,6]. Conversely, cutaneous adverse food reactions due to food additives such as dyes and preservatives has been established only in few cases either in humans and pets [7,8].

Debido to frequent updates and strategies to overwhelm adverse food reactions, the only recognized approach remains the deprivation diet [9]. In addition, the growing and worrying presence of antibiotics (oxytetracycline, tetracycline and chloramphenicol) and their residues in meat used for human and pet food, might be responsible for raising hypersensitivity reactions phenomena [10,11]. As to veterinary counterpart, antibiotics are widely used as feed additives to guarantee a better and well growth of farm animals, like chickens and pigs and to prevent the development of various diseases that affect also livestock breeding. However, recent researches revealed the in vitro apoptotic and pro-inflammatory (i.e interferon-γ release from peripheral blood mononuclear cells cultures) effect of intensive farming-derived bone meal [10,12,13]. Thus a chronic intake of contaminated food would induce a chronic inflammatory status in healthy animals paving the way for secondary infections or disturbances [14-18].

In light of these observations, both human and animal nutrition would really benefit for a prolonged and heavy intake of intensive farming-derived meat and meat by-products [10,11]. The bioavailability of this antibiotic, administered accordingly to the international health protocols, might enclose, in the long run schedule, a final storage in the animals bone, fat and muscles that theoretically might be transferred to the final consumer inducing specific allergies to antibiotic residues in foods [19]. Although Food and Drug Administration and World Health Organization have established maximum antibiotic residue limits, high concentrations of these residues can occur in human and pet food [11]. Moreover, Empedrad, et al. have also observed that, for instance, a 100-fold dilution of ciprofloxacin elicited a markedly positive intradermal skin test response in 25 healthy adults with no history of drug allergy [19].

Based on these observations, we can now open the debate about indirect consequences of long-term exposure to this antibiotic molecule both in pets and humans.

Bibliography


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