



Mini Review on the Consequences of Pesticides Exposure in Dairy Animal



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Abstract

Dairy animals are exposed to many toxic organic chemicals due to the increase in industrialization, heavy traffic exhaust, use of persistent organic chemicals in agriculture and incomplete combustion of wastes. Pesticides are one of the potent organic chemicals used regularly in Agriculture sector to protect the plants from insects, herbs and rodents and to increase the plant growth in all over the world. These chemicals are entered into the animal body through inhalation or using pesticides contaminated feed and water. Due to its prolonging exposure, residues of these hazardous chemicals are present in food of animal origin (milk & meat). Use of pesticides contaminated milk and meats are controlled in some advanced countries through strict legislation but its complete control and abolition is still a serious issue worldwide.

Keywords: Pesticides; Milk; Meat; Dairy; Animal

Routine practice of Pesticides

Pesticides are the persistent organic chemicals used frequently in agriculture sector worldwide against insects, pests and weeds to protect the crops, enhance its production and to obtain maximum yield. The extensive use of pesticides in agriculture sector, industry, public health, and in-and-around the home can be the cause of pesticides accumulation in the environment to which humans and animals are most often non-intentionally exposed [1]. Although pesticides reduce crop yield losses and improve food quality, they are integrally toxic to living organisms and likely to have undesirable impacts on human health when exposed to pesticide residues in the environment and food commodities [2].

Before harvesting, herbicides and insecticides are commonly used in Agriculture sector, after harvesting rodenticides are primarily used, and fungicides can be applied at any stage of the process depending on the crop. These potent chemicals can be transferred from plants to animals via the food chain [3]. Furthermore, breeding animals and their accommodation can themselves be sprayed with pesticides to prevent pest infestations [4]. Consequently, these persistent pesticides are moved and accumulated in animals and might be existent in food products of animal origin such as milk, meat, eggs and fish. Pesticides can also be accumulated in breeding animals from

contaminated water, feed and/or by pesticide applications in animal production places (treatment of cowsheds, sheepfolds, pigsties, warrens and/or treatment of animals themselves). After long and continuous exposure of pesticides, these toxic chemicals can also reach to other sensitive parts of animals such as brain, lungs and liver that might cause severe diseases in animals [5-7].

Exposure of pesticides

Environmental exposure of living organisms to the organic pollutants is a matter of serious public concern in all over the world. Milk producing animals (such as cow, buffalo, goat, camel etc.) might be exposed to the pesticides through carry-over process from air and pesticides contaminated feed. Consequently, several types of pesticides have been detected in milk not only in developing countries but it's still a serious issue in developed countries since milk and milk products are commonly used regularly by infants, children and adults throughout the world.

Animal feed stuffs are the major sources of different hazardous pesticides contamination in dairy sector [8]. Therefore, contamination of pesticides in milk can be controlled by avoiding the contamination of animal feed. In spite of the fact that majority of potent pesticides has been banned in advanced countries particularly in Europe (Regulation 528/2012/EU) and

substantially reduced worldwide, even though their residues may still be detected in milk products from different areas [9-10].

Pesticide residues

Pesticide residues in different food commodities mediate different sort of toxicities but their use is unavoidable because they play a crucial role in sophisticated agricultural technologies. Moreover, the use of different pesticides has become mandatory to meet the growing demand of enhanced food productivity for rapidly increasing population of the world. Most of the plant origin foods are grown using pesticides which have increased the agricultural productivity to a great extent [11]. However, these economic benefits are directly associated to the health hazards in human being and risk of environmental damage. Many pesticides and their residues have been reported as contributory factors in several diseases such as heart diseases, cancers, Alzheimer's disease and Parkinsonism [12-13]. Pesticide residues in fodders and feed may transfer into cattle via food chain and assimilate into the body systems of the animal [14]. Some pesticides are biodegradable while others persist in the soils for longer times [15]. Nowadays, maximum residues limit (MRLs) and monitoring project for agricultural products was built in many countries in order to control the quantity of pesticide in food.

Conclusion

In order to avoid the use of health hazardous chemicals, it is necessary to determine the levels of pesticides in food of animal origin especially in milk and strict legislations will be implemented.

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