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Pesticides and their Crucial Effects on Some Organisms

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Pesticides can be classified as insecticides, rodenticides, herbicides, fungicides and fumigants [1]. For years, it has been widely known that pesticide use can unfortunately disturb lots of nontarget organisms while killing pests. A number of study revealed the side effects of different pesticides on many organisms. In addition, pesticide not only have negative effects on early life stages but also vital organs of adult organisms. Therefore, this issue turned out an important one in ecosystem.

Carbaryl, an insecticide widely used in Turkey [2], has negative impacts on different animal species. It was reported that carbaryl especially has adverse effects on endangered anuran populations [3]. Many anuran larvae have badly affected by this insecticide. For instance, after exposure to carbaryl, delaying in metamorphosis and decreased body size were observed in *Rana sphenocephala* [4]. Carbaryl has also teratogenic effects in *Xenopus laevis*. Abnormal tail flexure was mostly seen teratogenic effect [5]. On the other hand, carbaryl has adverse effects on adult anurans. It was reported that carbaryl caused histopathologic damages in testes of two anuran species called Levantin frog, *Pelophylax bedriagae* [6] and in variable green toad, *Bufotes variabilis* [7]. Author reported that carbaryl has the potential to affect male fertility in these species. Besides, carbaryl caused adverse effects on some vital organs of adult anurans. For example, it caused histopathologic alterations on digestive tracts of two anuran species, *P. bedriagae* [8], *and B. variabilis* [9]. Çakıcı [10,11] reported that carbaryl also caused histopathologic damages in liver and kidney tissue of *P. bedriagae* and *B. variabilis*. Çakıcı [12,13] studied the effects of carbaryl on spleen and pancreas of *P. bedriagae.* According to this study, carbaryl caused histopathologic alterations both in spleen and pancreas of *P. bedriagae*. According to these data, it can be said that this insecticide may lead to functional abnormalities in these organs. Although these studies clearly show harmful effects of pesticides on adult amphibians, studies are generally on the effects of pesticides in tadpoles. Therefore, this fact should be bear in mind and more studies should be made about adult amphibians.

Hopkins [14] stated that lizards and snakes are the least studied taxa within ecotoxicological studies. To that end, Çakıcı and Akat [15] investigated the effects of carbarly in the testis of snake eyed lizard, *Ophisops elegans*. This study clearly show that carbaryl caused histopathologic defects in the testes of *O. elegans* and affects male fertility. Çakıcı and Akat [16] also reported the adverse effects of carbaryl on digestive tract of *O. elegans*.

Pesticides have also negative impacts on mammals. Çakıcı and Akat [17] investigated the adverse effects of diazinon, an organophosphate insecticide, on mice liver and kidney tissues. Çakıcı and Akat [18] also investigated the adverse effects of propanil, an acylanilide herbicide, on mice liver and kidney tissues. These studies clearly show that both pesticides caused histopathologic damages in liver and kidney of mice. Authors stated that exposure to these pesticides might cause harmful effects to nontarget organisms, including humans.

As clearly seen in these studies, pesticides have negative impacts on many organisms. Therefore, a great deal of attention should be given in pesticide applications.

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