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Letter to the Editor

Can We Use Vitamin E as an Anti-tumoral Agent for the Treatment of Tumors in Fish?

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Diseases in aquaculture, often resulting in massive mortality and reduced product quality, may cause heavy financial losses for fish farmers. In addition to the use of chemotherapy, development of vaccines, reduction of physical and environmental stress factors, and maintenance of optimal nutritional status may help to prevent diseases in cultivated fish. Several nutritional factors have been shown to affect incidence and severity of a variety of infectious diseases and to modulate immune responses in fish (1). Among these factors, the vitamin E is perfect candidate (2).

It is known that vitamin E is natural component of the fish diet and its concentration can be easily changed without altering the energetic metabolism. Moreover, it can be administered orally in high doses at low cost (3,4). In addition to all these advantages, vitamin E in body has important physiological functions such as in preventing lipid peroxidation (5), in maintaining membrane protein thiols (6), in stabilizing membrane structure (7), in protecting cells with other antioxidants from damage and lysis induced by oxidative stress (8), in preventing certain diseases (9) and activating fish immune functions (10,11).

Recently, it has been shown that carbonic anhydrase inhibitors acted as very powerful inhibitors of growth for many types of tumor cells, in vitro and in vivo (12). Bülbül et al. (13) reported that some sulfonamide derivatives have an inhibitory effect on the erythrocyte carbonic anhydrase (CA) enzyme at very low concentrations and they could be useful as chemotherapeutic agents for the treatment of trout tumors. Aras Hisar et al. (14) also reported that the pharmacological dose of vitamin E inhibited the erythrocyte CA enzyme activity in vitro and a significant ($P < 0.05$) decrease in the rainbow trout erythrocyte CA enzyme activity occurred one hour after vitamin E injection in in vivo experiment. A recent finding about the pharmacological dose of vitamin E has inhibitory effect on CA activity indicate it may be used clinically in the treatment of tumors in fish. But, future work needs to investigate the effect of vitamin E on the in vitro and in vivo growth of tumor cells.

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