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Toxic Environmental Substances Activated Apoptosis in Fish

Hossein AnvariFar (1,2), Abdolsamad Keramat Amirkolaie (2), Marcello Ceci (3), Hamed Kolangi Miandare (4), Ali Jalali (5), Sema İşisağ Üçüncü (6), and Nicla Romano (3)

(1) Department of Fisheries, Faculty of Animal Science and Fisheries, University of Agriculture and Natural Resources, P.O. Box 578, Sari, Iran, (2) University of Applied Science and Technology, Provincial Unit, P.O. Box: 4916694338, Golestan, Iran, (3) Tuscia, Ecological and Biologiacal Sciences, Italy (nromano@unitus.it), (4) Faculty of Fisheries and Environmental Sciences, Gorgan University of Agricultural Sciences and Natural Resources, Gorgan 49138-15739, Iran., (5) Center for Integrative Ecology, School of Life and Environmental Sciences, Deakin University, VIC 3280, Australia, (6) Department of Biology, Faculty of Science, Ege University, Bornova-35100 İzmir, Turkey

Session: Effects of Anthropogenic Pressure on Marine Ecosystems

Toxic Environmental Substances Activated Apoptosis in Fish

Hossein AnvariFar1, Abdolsamad Keramat Amirkolaie2, Marcello Ceci3 , Hamed Kolangi Miandare4, Ali Jalali5, Sema İşisağ Üçüncü6, Hossein Ouraji1 and Nicla Romano3

1 Department of Fisheries, Faculty of Animal Science and Fisheries, University of Agriculture and Natural Resources, P.O. Box 578, Sari, Iran.
2 University of Applied Science and Technology, Provincial Unit, P.O. Box: 4916694338, Golestan, Iran.
3 Department Ecological and Biological Sciences, University of Tuscia, Tuscia University, Viterbo 01100, Italy.
4Faculty of Fisheries and Environmental Sciences, Gorgan University of Agricultural Sciences and Natural Resources, Gorgan 49138-15739, Iran.
5Center for Integrative Ecology, School of Life and Environmental Sciences, Deakin University, VIC 3280, Australia.
6Department of Biology, Faculty of Science, Ege University, Bornova-35100 İzmir, Turkey

The industrial wastes, sewage effluents, agricultural run-off and decomposition of biological waste may cause high environmental concentration of chemicals in fresh and sea water that can interfere with the cell cycle in fish and activate the programmed cells death process (apoptosis). Metals (aluminum, arsenic, cadmium, chromium, cobalt, zinc, copper, mercury and silver) as well as other chemicals including bleached kraft pulp mill effluent (BKME), persistent organic pollutants (POPs), pesticides (organo-phosphated, organo-chlorinated, carbamates, phyretroids and biopesticides) and cyanobacterial toxins (microcystine, anatoxins-a and saxitoxins, nodularin and cylindrospermopsin, lipopolysaccarides) were evaluated in relation to apoptotic pathways, heat shock proteins and metallothioneins. Although research performed over the past decades has improved our understanding of processes involved in apoptosis in fish, yet there is lack of knowledge on associations between environmental pollutants and apoptosis. The apoptosis in key cells could be a useful tool to study the effects of different pollutants in fish species.