

International Conference on **Aquaculture & Fisheries** July 20-22, 2015 Brisbane, Australia

The quantitative trace level analysis of heavy metals through inductively coupled plasma optical emission spectrometry (ICP-OES) in fish samples collected from fresh water aquaculture

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The evaluation of toxic heavy metals; Cadmium (Cd), Chromium (Cr) and lead (Pb) has always been an essential phenomenon because of their involvement in environmental processes and their bioaccumulation in fish finally resulting in the transfer of a variety of diseases in humans due to consumption of such polluted fishes. Through Inductively Coupled Plasma-Optical Emission Spectrophotometer (ICP-OES), the trace level quantitative analysis of above mentioned metals following protocols of AOAC was performed for farm fishes of privately established fish farms present all over the Punjab, Pakistan. All laboratory formalities were considered and precautionary measures needed to be taken into account were implemented during the entire experimental work like sampling technique, acid digestion processes, acid fumes/toxics handling, gas cylinders hazards and plasma precautions etc. A total of 300 fish samples of almost fourteen different fish species (rohu, mrigal, thaila, grass carp, silver carp, common carp, dolla, pari, mali, tilapia, maraki, khagga, singarhi and big head) were collected from various private fish farms and analyzed during 2011-2013 duration. These were taken from different sites lying in Punjab regions including Bahawalpur, Channawan, D G Khan, Faisalabad, Farooqabad, Gujranwala, Jhang, Kasur, Khanewal, Kotliarian, Lahore, Mianchannu, Multan, Muzafargarh, Nankana, Pakpattan, Pirmahal, Sheikhpura, Sialkot and Vehari. The heavy metals viz. Cadmium, Chromium and lead were found present in varying degrees and extents in some of the fish muscles however were found either absent or within the suitable ranges in majority of the others. The high level of metal contamination/toxicity in fish muscles at some sites suggested that it was not suitable for human consumption.

Biography

Kashifa Naghma Waheed is presently working as Principal Chemist, Fisheries Research & Training Institute, Department of Fisheries, Punjab, Lahore. She started her career as Senior Chemist and served on various posts including Section Officer (Planning & Development), Section Officer (B&P Fisheries), Section Officer (Coordination), Statistical Officer-I, Technical Manager (Chemistry), Quality Manager (Chemistry) and finally Principal Chemist during her 22 years of Government Service till date. She played a key role in the process of accreditation of Fish Quality Control Laboratories by strengthening the requirements of Chemistry Laboratories (ICP-OES section, LC-MS section & General section). She did her BSc from Queen Mary College, Lahore and was awarded with Roll of Honour.

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