

Anthocyanin as Antidote against Genotoxicity in Catfishes

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Abstract—Application of fungicides is one of the most important components of integrated plant disease management. Hexaconazole 5% SC formulation is a Triazole fungicide belong to the broad group of ergosterol biosynthesis inhibitor (EBI) which is widely used to control sheath blight of paddy. Fungicides usage in an inappropriate amount in the agricultural fields to control pests is extremely toxic to non-target organisms like fish and other faunas. Many pesticides affect fish health through impairment of metabolism, leading to bio magnification. However, application of fungicides at right dose is crucial unlike use of carbendazim and mancozeb at overdose. Present investigation was dedicated to assess the remedial effect of anthocyanin to the toxicity induced by Hexaconazole 5% SC on *Channapunctatus*. Genotoxicity was studied extensively due to fungicide exposure of non-target organism. Fish was exposed to ten different exposures of Hexaconazole 5% SC (5, 10, 15, 20, 25, 30, 35, 40, 45 and 50 ppm) for 90 days. LC₅₀ was found to be 25.0034 by using SPSS vs.16. After acute toxicity under sub lethal dose for long term exposure the fish were sacrificed and DNA and RNA were isolated using standard methods in different vital organs like gill, heart, liver, kidney, muscle and spleen. The genetic materials were examined in agarose gel and spectrophotometric readings revealed degradation at molecular level. To combat the toxic effect caused by the fungicide, anthocyanin was extracted from purple fleshed sweet potato and administered to the exposed fish at a dose 5mg/ml at an interval of 7 days for two months, which showed miraculous curative action to restore normal metabolism. This is the first report of administration of anthocyanin in fish food to reduce the toxic effect of fungicides in fish under agro-ecological system.

Keywords: Hexaconazole, *Channapunctatus*, LC₅₀, Genotoxicity, Anthocyanin.