Genotoxic effect of pesticides on gill tissues of green-lipped mussel *Perna viridis* (L.)

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Received 10 October 2016; revised 23 August 2017

The marine ecosystem is constantly threatened by a wide variety of anthropogenic hazardous chemicals, such as, heavy metals, pesticides, oil, petroleum hydrocarbons, etc., from industries, agricultural sources and sewage disposal. Pakistan, being a country with agriculture prominence, uses pesticides widely for crop protection, and thereby suffers from pollution. In the present study, we assessed a few biomarkers as indicators of the genotoxic chemicals, pesticides and herbicides. We inducted micronucleus (MN) in the gill tissues of green mussel *Perna viridis* (L.) exposed to different concentrations of organo-phosphate pesticides (chlorpyrifos, malathion) and synthetic pyrethroid pesticides (cypermethrin, lambda-cyhalothrin) and a herbicide (buctril). The MN frequencies of the pesticides treated mussels were observed to increase significantly (P <0.05) in a dose-dependent manner at all exposure periods. The highest MN frequencies were recorded in gill tissues of cypermethrin treated mussels on the 12th day (10, 11.5 and 13.5‰ at 0.5, 1 and 1.5 ppm, respectively). The genotoxic effect of pesticides on *Perna viridis* (gill tissue) was in the following order cypermethrin > chlorpyrifos > malathion > lambda-cyhalothrin > buctril.

Keywords: Buctril, Chlorpyrifos, Cyhalothrin, Cypermethrin, Herbicides, Malathion, Micronucleus, Mussels, Pollution