

The Effects of Hexavalent Chromium on *Dictyostelium* Chemotaxis and Proteome

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Hexavalent chromium (Cr^{6+}) is a common environmental pollutant extensively used in industrial processes like chrome-plating, leather tanning, and paint making that is capable of accumulating in aquatic vascular plants and tissue of animals. The uneven geographical distribution of chromite mining makes this issue a global one and indicates that further study of Cr^{6+} may lead to targeted treatment in individuals who ingest contaminated water and wildlife or suffer from direct skin contact with contaminated soil. *Dictyostelium discoideum* is a soil-dwelling eukaryote that contains many genes that are homologous to human genes while exhibiting a simple lifecycle, restricted cell types and behaviors, and rapid growth. *Dictyostelium* is widely regarded as a good model organism for studying eukaryotic cell response to toxic compounds. The aim of the study is to determine how hexavalent chromium affects cytoskeletal proteins, specifically actin, and the movement of *Dictyostelium* in response to Cr^{6+} . A focus is placed on actin and its associated proteins because it has been shown to be a key player specialized stress signaling pathways, and its associated proteins may be multifunctional and may be implicated in a variety of conditions. Chemotaxis, cell movement in response to an external stimulus, was assayed following cell treatment to determine how cell signaling changes as a result of Cr^{6+} exposure altered the assembly of the actin network. Differences in the actin network of both the treatment and control groups were visualized using fluorescence microscopy. Electrophoresis was then performed on control and treatment groups to resolve proteins and identify specific changes in the expression of actin and its associated proteins.