

## Acrylamide acute neurotoxicity in adult zebrafish

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Acute exposure to acrylamide (ACR), a type-2 alkene, may lead to ataxia, skeletal muscles weakness and numbness of the extremities in human and laboratory animals. In the present manuscript, ACR acute neurotoxicity has been characterized in adult zebrafish, a vertebrate model increasingly used in human neuropharmacology and toxicology research. At behavioral level, ACR-treated animals exhibited “depression-like” motor retardation behavior, including hypoactivity, increased geotaxis, droopy tail, darkening of the skin and increased cortisol levels. At transcriptional level, ACR induced down-regulation of regeneration-associated genes and upregulation of oligodendrocytes and reactive astrocytes markers, altering also the expression of genes involved in the presynaptic vesicle cycling. ACR induced also significant changes in the zebrafish brain proteome and formed adducts with selected cysteine residues of specific proteins, some of them essential for the presynaptic function. Finally, the metabolomics analysis shows a depletion in the monoamine neurotransmitters in the brain of the exposed fish, a finding supporting the hypothesis of a depressive disorder induced by acute ACR exposure.

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