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Toxic effects of fluoride on organisms

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Abstract: Accumulation of excess fluoride in the environment poses serious health risks to plants, animals, and humans. This endangers human health, affects organism growth and development, and and negatively impacts the food chain, thereby affecting ecological balance. In recent years, numerous studies focused on the molecular mechanisms associated with fluoride toxicity. These studies have demonstrated that fluoride can induce oxidative stress, regulate intracellular redox homeostasis, and lead to mitochondrial damage, endoplasmic reticulum stress and alter gene expression. This paper reviews the present research on the potential adverse effects of overdose fluoride on various organisms and aims to improve our understanding of fluoride toxicity.

Keywords: fluoride; organisms; environment; toxicity

1. Introduction

Fluoride is a negatively charged non-metallic halogen. Both organic and inorganic forms of fluoride are frequently found in a variety of natural environments. Consumption of fluoride is necessary for human and animal health as it plays an important role in maintaining the structure and physiological function of bones and teeth[1]. The principal sources of fluoride in the human body are fluoride containing dental products and fluoridated water, although the concentration of fluoride in water depending on geographical location. The optimal fluoride concentration in