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# Individual and joint toxic effects of cadmium sulfate and $\alpha$ -naphthoflavone on the development of zebrafish embryo

**Key words:** Joint toxicity; Cadmium sulfate;  $\alpha$ -Naphthoflavone; Zebrafish embryo; Oxidative stress

# Background

- Cadmium and polycyclic aromatic hydrocarbon (PAH) are widely distributed in the environment and caused significant toxicity in fishes.
- Besides, oxidative stress, CYP1A and ABC transporters have been considered to be important in the toxicity of both chemicals.
- Cadmium and PAH usually coexist in the environment, but the investigations on the joint toxicity of these chemicals are still rare.

**Co-treatment of Cd and ANF produced more severe damage in zebrafish embryos than individual treatment**

**Cd-ANF mixtures produced much more increase of the oxidative stress in zebrafish embryos**

**Co-treatment of Cd and ANF significantly down-regulated the mRNA level of *cyp1a* and *mrp1***

**Production of oxidative stress and altered expression of *cyp1a* and *mrp1* could be important components of the joint toxicity of Cd and ANF**