

## ARE MONOHALOACETIC ACIDS GENOTOXIC AND/OR CARCINOGENIC UNDER LONG-TERM EXPOSURE CONDITIONS?

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Water disinfection has been one of the biggest sanitary achievements of the past century, dramatically improving our public health status. However, a large and increasing number of chemical species, globally named water disinfection by-products (DBPs), are formed during the sanitation process. Over the years, DBPs exposure has been linked to a number of health effects, including an increased risk of bladder and colon cancer, reproductive failure and respiratory symptoms. This risk has been associated to some DBPs, which concentrations have been regulated by different public health agencies. However, compounds that belong to non-regulated classes still present a possible hazard, as their harmful potential has not been tested yet.

Haloacetic acids are one of the most abundant classes of DBPs. Among them, monohaloacetic acids [chloroacetic acid (CAA), bromoacetic acid (BAA), and iodoacetic acid (IAA)], have been shown to present the highest cytotoxic and genotoxic effect when compared to their polyhaloacetic counterparts in short-term *in vitro* studies. Nevertheless, acute, high concentration treatments do not present a realistic outline of carcinogenicity induction. The aim of our study was to analyze the effect of these chemicals in an *in vitro* system that better emulates a real exposure scenario. Using this experimental approach, a cell line (UROtsa) derived from the main target of DBPs carcinogenicity -the bladder- was exposed for 8 weeks to sub-toxic concentrations of all three compounds. Different cell-transformation markers were assessed throughout the exposure period, such as cell proliferation and morphological changes, anchorage-independent cell growth, and secretion of matrix metalloproteinases (MMPs).

Long-term exposure to low concentrations of the HAAs showed no cell-transforming ability in UROtsa cells, however, cell toxicity experiments suggest an increased resistance to oxidative damage in long-term exposed cells. Further experiments are necessary to determine non-carcinogenic effects of a long-term exposure to this class of DBPs.