

Amifostine Alleviates Cyclophosphamide Induced Taste Deficits.

Cyclophosphamide (CYP) is a commonly prescribed chemotherapy drug. It is a DNA alkylating agent that indiscriminately attacks proliferating cells. Like other chemotherapy drugs, CYP also has adverse side effects such as taste disturbances which can lead to malnutrition and poorer recovery. Amifostine (AMF) is an approved cyto-protective adjuvant used in combination with radiation therapy or chemotherapy (Kemp et al., 1996). AMF has been shown to be effective in preventing radiation-induced side effects like mucositis, nephrotoxicity, xerostomia, etc. but it has never been tested for chemotherapy-induced disruptions of taste. Our previous work with male C57BL/6J mice, using behavioral methods, indicated that CYP (IP, 75mg/kg body wt) causes a two-phase taste disturbance in mice. The first phase lasts up to 4 days after injection, followed by the second phase during days 9 to 12 after injection. The first phase was due to the cytotoxic effect of CYP on fungiform taste buds and von-Ebner gland while the second phase was due to disruption in the taste cell replacement cycle (Mukherjee & Delay, 2011). We hypothesized that AMF will alleviate the CYP-induced taste deficits. We used behavioral and IHC methods to test our hypothesis. Sucrose detection threshold test indicated that pre-treatment (30 min prior to CYP injection) with AMF (subcutaneous, 100 mg/kg body wt) reduces the elevation in detection threshold of sucrose caused by CYP. It also protects against the loss of fungiform papilla and prevents the disruption of the fungiform taste buds observed 4 days after CYP injection. AMF also partially protects the proliferative pool of cells in the lingual epithelium and taste buds thought to be responsible for normal taste sensory cell replacement.

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