

**Clinician Information Summary**

# HYDRAZINE SULFATE

## SUMMARY

Hydrazine sulfate is an industrial chemical marketed to prevent weight loss and anorexia associated with cancer. It has not proved effective in improving appetite, reducing weight loss or improving survival in large randomized controlled trials in adults with solid tumors. On the contrary, HS causes marked hepatotoxicity and hepatic tumors in rodents; it is associated with nausea and vomiting, fatigue, sensory and motor neuropathies and significantly reduced quality of life in cancer patients. It is under investigation as a potential treatment for endotoxin-mediated shock. HS exhibits significant mutagenicity and carcinogenicity in animals. It has not been evaluated for safety or toxicity during pregnancy, lactation or childhood.

**POPULAR USES:** Cancer remedy to improve appetite, decrease weight loss and shrink solid tumors.

**CHEMICAL CONSTITUENTS:** Hydrazine sulfate. HS blocks gluconeogenesis by blocking phosphoenolpyruvate carboxykinase. It is also a mild MAO inhibitor.

## SCIENTIFIC DATA

*In Vitro:* HS is mutagenic; HS failed to inhibit growth in prostate cancer cells. HS modulated tumor necrosis factor (TNF) response to endotoxin.

*In Animals:* Combinations of nutritional supplements (po or parenteral) and HS in animals enhanced tumor growth. HS alone can induce pulmonary and hepatic tumors in rodents.

*In Humans:* Early case series and open label trials reported symptomatic benefits on appetite and weight in adults with end-stage cancer. These benefits were not substantiated in

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subsequent randomized, controlled, double-blind studies of adults with solid tumors. The larger, more methodologically rigorous trials showed worse outcomes in terms of survival and quality of life. No studies have evaluated the effectiveness of HS in treating pediatric oncology patients, pregnant or lactating women or in using HS to treat endotoxin-mediated shock in humans.

**TYPICAL DOSE:** Adult dose 60 mg po TID

### **TOXICITY AND SIDE EFFECTS**

*Toxicity:* HS is mutagenic and genotoxic *in vitro*; it is carcinogenic in animal models.

*Side effects:* Gastrointestinal symptoms, dizziness, pruritus, peripheral neuropathies.

*Interactions with other medications:* Not to be used with barbiturates or benzodiazepines.

*Contraindications:* Not to be used in patients with liver disease or who consume alcohol excessively. Restrict intake of tyramine-containing foods as with other MAO inhibitors.

*Pregnancy and lactation:* No safety studies.

*Pediatric use:* No clinical studies or systematic surveillance.

### **ADDITIONAL REFERENCES OR RESOURCES**

- HOME: <http://www.mcp.edu/herbal/default.htm>
- University of Texas Center for Alternative Medicine Research: <http://www.sph.tmc.edu:8052/utcarn/summary/hydrazine.htm>
- Kaegi, E. (1998). "Unconventional therapies for cancer: 4. Hydrazine sulfate. Task Force on Alternative Therapies of the Canadian Breast Cancer Research Initiative." CMAJ 158(10): 1327-30.