



Bonus Monographs



Pentostatin; (2'-deoxycoformycin; DCF)

(PEN-toh-stah-tin)

PREGNANCY CATEGORY: D

CLASSIFICATION(S):

Antineoplastic, antibiotic

Rx: Nipent

SEE ALSO ANTINEOPLASTIC AGENTS.

ACTION/KINETICS

Isolated from *Streptomyces antibioticus*; inhibits the enzyme ADA. Inhibition of ADA, especially in the presence of adenosine or deoxyadenosine, results in cellular toxicity (T cells, B cells) due to elevated intracellular levels of dATP; this blocks the synthesis of DNA through inhibition of ribonucleotide reductase. Also inhibits RNA synthesis and causes increased DNA damage. **t_{1/2}**, **distribution:** 11 min; **terminal:** 5.7 hr. Approximately 90% is excreted in the urine as unchanged pentostatin or metabolites.

USES

Hairy cell leukemia in adults who are refractory to alpha-interferon; such individuals have progressive disease after a minimum of 3 months of alpha-interferon therapy or no response after a minimum of 6 months of alpha-interferon therapy.

CONTRAINDICATIONS

In combination with fludarabine phosphate. Lactation.

SPECIAL CONCERNS

Treat clients with infection only if the potential benefit outweighs the risk;

infection should be treated before pentostatin therapy is initiated or resumed. Safety and effectiveness have not been determined in children.

SIDE EFFECTS

Hematologic: Leukopenia, anemia, thrombocytopenia, ecchymosis, lymphadenopathy, petechia, abnormal erythrocytes, leukocytosis, pancytopenia, purpura, splenomegaly, eosinophilia, hematologic disorder, hemolysis, lymphoma-like reaction. **GI:** N&V, anorexia, abdominal pain, diarrhea, constipation, flatulence, stomatitis, colitis, dysphagia, dyspepsia, eructation, gastritis, **GI hemorrhage**, gum hemorrhage, intestinal obstruction, leukoplakia, melena, periodontal abscess, proctitis, abnormal stools, esophagitis, gingivitis, mouth disorder. **Hepatic:** Hepatitis, hepatomegaly, **hepatic failure**. **CNS:** Headache, anxiety, abnormal thinking, confusion, depression, dizziness, insomnia, nervousness, paresthesia, somnolence, agitation, amnesia, ataxia, abnormal dreams, depersonalization, emotional lability, hyperesthesia, hypesthesia, hypertonia, incoordination, decreased libido, neuropathy, stupor, tremor, vertigo, **coma**, **seizures**. **CV:** Arrhythmia, abnormal ECG, **hemorrhage**, thrombophlebitis, aortic stenosis, arterial anomaly, cardiomegaly, CHF, **cardiac arrest**, flushing, hypertension, **MI**, palpitation, varicose vein, **shock**. **Dermatologic:** Rash, skin disorder, eczema, dry skin, herpes simplex, herpes zoster, maculopapular rash, pruritus, seborrhea, skin discoloration, sweating, vesiculobullous rash, acne, alopecia, exfoliative dermatitis, contact derma-

★ = Available in Canada H = Herbal Drug IV = Intravenous Drug *bold italic* = life threatening side effect

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titis, fungal dermatitis, benign skin neoplasm, psoriasis, SC nodule, skin hypertrophy, urticaria. **GU:** GU disorder, dysuria, hematuria, fibrocystic breasts, gynecomastia, hydronephrosis, oliguria, polyuria, pyuria, toxic nephropathy, urinary frequency, urinary retention, urinary urgency, UTI, impaired urination, urolithiasis, vaginitis.

Musculoskeletal: Myalgia, arthralgia, asthenia, facial paralysis, abnormal gait, arthritis, bone pain, osteomyelitis, neck rigidity, pathologic fracture.

Respiratory: Cough, URI, lung disorder, bronchitis, dyspnea, epistaxis, lung edema, pneumonia, pharyngitis, rhinitis, sinusitis, asthma, atelectasis, hemoptysis, hyperventilation, hypoventilation, increased sputum, laryngitis, larynx edema, lung fibrosis, pleural effusion, pneumothorax, **pulmonary embolus.**

Body as a whole: Fever, infection, fatigue, weight loss or gain, peripheral edema, pain, allergic reaction, chills, sepsis, chest pain, back pain, flu syndrome, malaise, neoplasm, abscess, enlarged abdomen, ascites, acidosis, dehydration, diabetes mellitus, gout, abnormal healing, cellulitis, facial edema, cyst, fibrosis, granuloma, hernia, hemorrhage or inflammation of the injection site, moniliasis, pelvic pain, photosensitivity, **anaphylaxis**, mucous membrane disorder, immune system disorder, neck pain. **Ophthalmic:** Abnormal vision, conjunctivitis, eye pain, blepharitis, cataract, diplopia, exophthalmos, lacrimation disorder, optic neuritis, retinal detachment.

Miscellaneous: Ear pain, deafness, otitis media, parosmia, taste perversion, tinnitus.

LABORATORY TEST CONSIDERATIONS

↑ LFT, BUN, creatinine, LDH, CPK, gamma globulins. Albuminuria, glycosuria, hyponatremia, hypocholesterolemia.

OD OVERDOSE MANAGEMENT

Symptoms: *Severe renal, hepatic, pulmonary, and CNS toxicity; death can result.* **Treatment:** General supportive measures.

DRUG INTERACTIONS

Fludarabine / ↑ Risk of fatal pulmonary toxicity

Vidarabine / ↑ Effect of vidarabine, including side effects

HOW SUPPLIED

Powder for Injection: 10 mg

DOSAGE

• IV BOLUS, IV INFUSION

Alpha-interferon-refractory hairy cell leukemia.

4 mg/m² every other week.

NURSING CONSIDERATIONS

SEE ALSO **NURSING CONSIDERATIONS FOR ANTINEOPLASTIC AGENTS.**

ADMINISTRATION/STORAGE

IV 1. The optimum duration of treatment has not been determined; if major toxicity has not occurred, continue treatment until a complete response has been achieved. Follow by two additional doses and then stop treatment. If, after 12 months, there is only a partial response, discontinue treatment.

2. Withhold if there is severe rash, CNS toxicity, infection, or elevated serum creatinine.

3. Temporarily withhold if the absolute neutrophil count falls below 200 cells/mm³ during treatment in a client who had an initial neutrophil count greater than 500 cells/mm³. Continue treatment when the count returns to pretreatment levels.

4. Store vials in the refrigerator at 2–8°C (36–46°F). Reconstituted vials or reconstituted vials further diluted may be stored at room temperature and ambient light for up to 8 hr.

5. To reconstitute, add 5 mL of sterile water for injection to the vial; mix thoroughly to obtain complete dissolution for a concentration of 2 mg/mL.

6. May be given by IV bolus or diluted in 25–50 mL of D5W or 0.9% NaCl injection and administered over 30 min. Dilution of the entire contents of the reconstituted vial with 25 or 50 mL provides a concentration of diluted pentostatin of 0.33 or 0.18 mg/mL, respectively. Such a dilution does not interact with polyvinylchloride infusion containers or administration sets.

ASSESSMENT

1. Note previous experience with alpha-interferon and response.

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2. Obtain baseline hematologic parameters, renal and LFTs.
3. Question client initially and note any symptoms of infection.

CLIENT/FAMILY TEACHING

1. Report the development of rashes as these may require discontinuation of drug therapy.
2. Practice effective birth control.
3. Avoid direct sun exposure; use protection when necessary.
4. Report for scheduled lab studies to

evaluate hematologic parameters. Periodic bone marrow aspirates and biopsies may be necessary (q 2-3 mo).

5. Avoid immunizations, crowds, and those with infections. Report any fever, sore throat, bruising/bleeding, or S&S of infection.

OUTCOMES/EVALUATE

Improved hematologic parameters (↑ hemoglobin, granulocyte, and platelet counts) with hairy cell leukemia

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= see color insert

H

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IV

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