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# Bendamustine Hydrochloride

National Cancer Institute

## Source

National Cancer Institute. *Bendamustine Hydrochloride*. NCI Thesaurus. Code C61565.

The hydrochloride salt of bendamustine, a bifunctional mechlorethamine derivative with alkylator and antimetabolite activities. Bendamustine possesses three active moieties: an alkylating group; a benzimidazole ring, which may act as a purine analogue; and a butyric acid side chain. Although its exact mechanism of action is unknown this agent appears to act primarily as an alkylator. Bendamustine metabolites alkylate and crosslink macromolecules, resulting in DNA, RNA and protein synthesis inhibition, and, subsequently, apoptosis. Bendamustine may differ from other alkylators in that it may be more potent in activating p53-dependent stress pathways and inducing apoptosis; it may induce mitotic catastrophe; and it may activate a base excision DNA repair pathway rather than an alkyltransferase DNA repair mechanism. Accordingly, this agent may be more efficacious and less susceptible to drug resistance than other alkylators.