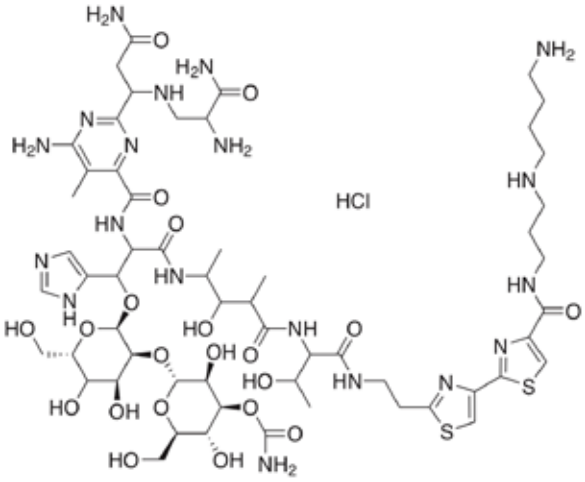
Bleomycin

Bleomycins are glycopeptides first produced by *Streptomyces verticillus* that exhibit potent anticancer and antibiotic properties. **Bleomycin Sulfate (B4518),** a mixture of bleomycins, contains the predominant components of commercially available bleomycin. Bleomycin is used to treat many cancers, including squamous cell carcinoma, testicular cancer, and Hodgkin lymphoma; it is also a component of the ABVD chemotherapy regimen. Bleomycin induces strand breaks in DNA and prevents incorporation of thymidine into DNA[1-3].

Bleomycin has two primary structural domains: the bithiazole DNA interaction site and a metal binding site[1]. Bleomycin can chelate iron at the second site, generating reactive oxygen species that cause DNA degradation[4]. Bleomycin may also bind to DNA directly, inducing strand breakage by removing hydrogen from DNA bases[5].

References:
1. Benitz-Bribiesca L and Sanchez-Suarez P. Ann. N.Y. Acad. Sci. 1999;887:133-49.
2. Vorobjev PE, Smith JB, Pyshnaya IA, et al. Bioconjug Chem. 2003 Nov-Dec;14(6):1307-13.
3. Liu Y, Wu F, and Zou G. Anal Chim Acta. 2007 Sep 19;599(2):310-4.
4. Sugiura Y, Suzuki T, Otsuka M, et al. J. Biol. Chem. 1983;258(2):1328-36.
5. Hecht SM. J Nat Prod. 2000 Jan;63(1):158-68.
6. Li P, Li DF, Guo ZT, et al. Zhonghua Kou Qiang Yi Xue Za Zhi. 2013 Jan;48(1):18-22.
7. Huang YD, Li P, Tong X, et al. Indian J Pharmacol. 2015 Jan-Feb;47(1):55-8.



Bleomycin A5 HCl (A4517) can induce two modes of cell death: necrosis and apoptosis. Bleomycin A5 may also treat hemangioma, as it has shown activity in cellular and animal models[6]. Additionally, this compound upregulates expression of p53 and downregulates activity of telomerase in vitro[7].