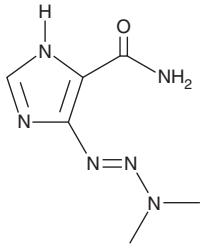
PRODUCT INFORMATION

Dacarbazine

Item No. 21877

CAS Registry No.:	4342-03-4
Formal Name:	5-(3,3-dimethyl-1-triazen-1-yl)-1H-imidazole-4-carboxamide
Synonyms:	NCI C04717, NSC 45388
MF:	$C_6H_{10}N_6O$
FW:	182.2
Purity:	≥98%
UV/Vis.:	λ_{max}: 236, 326 nm
Supplied as:	A crystalline solid
Storage:	-20°C
Stability:	≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

Dacarbazine is supplied as a crystalline solid. A stock solution may be made by dissolving the dacarbazine in the solvent of choice. Dacarbazine is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide, which should be purged with an inert gas. The solubility of dacarbazine in these solvents is approximately 0.2, 0.5, and 0.3 mg/ml, respectively.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of dacarbazine can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of dacarbazine in PBS, pH 7.2, is approximately 0.1 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

Dacarbazine is a DNA alkylating prodrug that is activated by P450 enzymes in liver microsomes.[1] Following activation, it is converted, through a series of reactions, into a methyldiazonium cation that alkylates DNA at all phases of the cell cycle and induces apoptosis. *In vitro*, dacarbazine inhibits the growth of B16/F1, A-875, and SK-MEL-5 melanoma and non-cancerous WI-38 lung fibroblast and L-02 hepatocyte cell lines (IC_{50}s = 260, 287, 380, 526, and 367 µM, respectively).[2] Dacarbazine toxicity to 518A2 and SK-MEL-28 melanoma cell lines increases in a time-dependent manner with IC_{50} values of 121 and >400 µM, respectively, following a 1 hour incubation and 2.5 and 50 µM, respectively, following a 96 hour incubation.[3] *In vivo*, dacarbazine (70 mg/kg, once every 2 days) decreases tumor volume by 59.1% in a B16/F1 murine melanoma model in mice.[2] Formulations containing dacarbazine have been used in the treatment of metastatic melanoma and for Hodgkin's lymphoma in combination with other antineoplastic agents.

References

1. Marchesi, F., Turriziani, M., Tortorelli, G., *et al.* Triazene compounds: Mechanism of action and related DNA repair systems. *Pharmacol. Res.* **56(4)**, 275-287 (2007).
2. Jin, J.-l., Gong, J., Yin, T.-j., *et al.* PTD4-apoptin protein and dacarbazine show a synergistic antitumor effect on B16-F1 melanoma *in vitro* and *in vivo*. *Eur. J. Pharmacol.* **654(1)**, 17-25 (2011).
3. Valiahdi, S.M., Heffeter, P., Jakupec, M.A., *et al.* The gallium complex KP46 exerts strong activity against primary explanted melanoma cells and induces apoptosis in melanoma cell lines. *Melanoma Res.* **19(5)**, 283-293 (2009).

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