3050 Spruce Street
Saint Louis, Missouri 63103 USA
Telephone 800-325-5832 • (314) 771-5765
Fax (314) 286-7828
email: techserv@sial.com
sigma-aldrich.com

ProductInformation

Carboplatin

Product Number **C 2538**
Store at Room Temperature

Product Description
Molecular Formula: $C_6H_{12}N_2O_4Pt$
Molecular Weight: 371.3
CAS Number: 41575-94-4
Synonym: cis-diammine (1,1-cyclobutanedicarboxylato) platinum, (SP-4-2)-diammine[1,1-cyclobutanedicarboxylato (2-)-O,O']platinum[1]

Carboplatin is a platinum coordination compound and antineoplastic agent that is related to cisplatin. It exerts its effects by covalent reaction with DNA to produce interstrand and intrastrand DNA crosslinks, and DNA-protein crosslinks. From *in vitro* studies on isolated DNA and CHO cells, the adducts formed from the reaction of carboplatin with DNA include the intrastrand cross-link cis-Pt$(NH_3)_2$d(pGpG) (Pt-GG), cis-Pt-$(NH_3)_2$d(pApG) (Pt-AG), cis-Pt$(NH_3)_2$d$(GMP)_2$ (G-Pt-G), and monofunctionally bound platinum (cis-Pt$(NH_3)_3$dGMP (Pt-G).[2] A comparison of the sequence specificity of the interaction of various cisplatin analogues with DNA, including carboplatin, has been performed.[3]

A study of γ-glutamyltransferase overexpression in carboplatin-treated HeLa cells, with relation to cell defense mechanisms, has been reported.[4] Mouse peritoneal macrophages treated with carboplatin have been shown to produce enhanced IL-1α and TNF-α levels in tissue culture supernatants.[5] A 96 well assay study of the action of carboplatin on 10 human ovarian cancer cell lines has been described.[6]

An analysis of the principal adducts of carboplatin with DNA by capillary electrophoresis and laser-induced fluorescence detection has been published.[7] An HPLC-MS method for the analysis of carboplatin from rat plasma ultrafiltrate and tumor tissue has been described.[8]

Precautions and Disclaimer
For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions
This product is soluble in water (10 mg/ml), yielding a clear, colorless solution.

References
1. The Merck Index, 12th ed., Entry# 1870.
2. Blommaert, F. A., et al., Formation of DNA adducts by the anticancer drug carboplatin: different nucleotide sequence preferences *in vitro* and in cells. Biochemistry., **34(26)**, 8474-8480 (1995).
3. Murray, V., et al., Interaction of 11 cisplatin analogues with DNA: characteristic pattern of damage with monofunctional analogues. Biochim. Biophys. Acta, **1354(3)**, 261-271 (1997).
4. Daubeuf, S., et al., Different mechanisms for γ-glutamyltransferase-dependent resistance to carboplatin and cisplatin. Biochem. Pharmacol., **66(4)**, 595-604 (2003).
5. Palma, J. P., and Aggarwal, S. K., Cisplatin and carboplatin-mediated activation of murine peritoneal macrophages *in vitro*: production of interleukin-1α and tumor necrosis factor-α. Anticancer Drugs, **6(2)**, 311-316 (1995).
6. Garner, C. M., et al., *In vitro* testing of platinum-based drugs on a panel of human ovarian tumour cell lines. Br. J. Biomed. Sci., **59(1)**, 15-19 (2002).

7. Sharma, M., et al., Capillary electrophoretic separation and laser-induced fluorescence detection of the major DNA adducts of cisplatin and carboplatin. Anal. Biochem., **228(2)**, 307-311 (1995).

8. Guo, P., et al., Determination of carboplatin in plasma and tumor by high-performance liquid chromatography-mass spectrometry. J. Chromatogr. B Analyt. Technol. Biomed. Life Sci., **783(1)**, 43-52 (2003).

GCY/RXR 11/03