Background: Doxorubicin, an anthracycline antibiotic, inhibits DNA and RNA synthesis in mammalian cells and has been shown to be a very effective anti-tumor agent (1, 2). Doxorubicin binds to nucleic acids by intercalating the DNA double helix and stabilizing topoisomerase II cleavage complexes, leading to DNA strand breaks at specific doxorubicin-induced sites (3). Doxorubicin has been shown to inhibit DNA synthesis in a dose-dependent manner in MCF7 cells, which corresponds closely with growth inhibition (4). Researchers have also demonstrated that doxorubicin effectively inhibits human DNA topoisomerase I (5).

Molecular Formula: C_{27}H_{29}NO_{11}\cdot HCl

Molecular Weight: 579.98 g/mol

Solubility: Soluble in DMSO at 100 mg/ml; very poorly soluble in ethanol; soluble in water at 10 mg/ml with slight warming.

Purity: >99%

Directions for Use: Doxorubicin is supplied as a lyophilized powder. For a 10 mM stock, reconstitute the 5 mg in 860 µl DMSO. Working concentrations and length of treatments vary depending on the desired effect, but it is typically used at 0.1-5 µM for 12-24 hours. Soluble in DMSO at 100 mg/ml; very poorly soluble in ethanol; soluble in water at 10 mg/ml with slight warming.

Background References:

Storage: Store lyophilized or in solution at -20°C, desiccated. Protect from light. In lyophilized form, the chemical is stable for 24 months. Once in solution, use within 3 months to prevent loss of potency. Aliquot to avoid multiple freeze/thaw cycles.