Aphidicolin, Ready Made Solution from Nigrospora sphaerica

Catalog Number A4487
Storage Temperature –20 °C

CAS RN 38966-21-1
Synonyms: ICI 69653, NSC-234714

Product Description
Molecular formula: C_{20}H_{34}O_{4}
Molecular weight: 338.48

Aphidicolin is a tetracyclic diterpene with antiviral and antimitotic properties used for cell cycle synchronization in various cell lines.\(^1\)-\(^7\) Aphidicolin inhibits the growth of eukaryotic cells and the growth of certain animal viruses with no effect on prokaryotic cells growth. It specifically inhibits DNA polymerase \(\alpha\), which is responsible for DNA replication.\(^2\)-\(^10\) It also inhibits \(\alpha\)-like DNA polymerases of plants and yeasts,\(^1\) but does not inhibit synthesis of RNA and proteins.\(^11\) Aphidicolin specifically competes for the dCTP-specific binding site on DNA polymerase \(\alpha\).\(^9\),\(^12\)

DNA synthesis was inhibited in Ehrlich ascites tumor cells using Aphidicolin at 0.02–2 \(\mu\)g/mL,\(^11\) and at 100 \(\mu\)g/mL in Xenopus egg extracts.\(^13\) Treatment with aphidicolin reversibly arrests parasitic cell cycle leading to the accumulation of cells at the G1/S phase.\(^14\) FRA3B is the most common human fragile site, situated on chromosome band 3p14.2.\(^15\),\(^16\) Under normal conditions this site is stable, but upon treatment with aphidicolin, it displays gaps and breaks.\(^17\) Ataxia telangiectasia kinase (ATR) enzyme is a major damage sensor protein, which responds to stalled and collapsed replication forks.\(^17\) Aphidicolin serves as a tool in studies of ATR DNA binding and activity.\(^17\)

The product is supplied as a 1 mg/mL, 0.2 \(\mu\)m filtered solution in dimethyl sulfoxide (DMSO).

Purity: \(\geq 98\%\) (HPLC)

Precautions and Disclaimer
This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability
Store the product sealed at –20 °C protected from light. Under these conditions the product is stable for at least 5 years.

References
10. Ikegami, S. et al., Aphidicolin prevents mitotic cell division by interfering with the activity of DNA polymerase-alpha. 
11. Iliakis, G. et al., Effects of aphidicolin on cell proliferation, repair of potentially lethal damage and repair of DNA strand breaks in Ehrlich ascites tumour cells exposed to X-rays. 
14. Hofstetrová, K. et al., Giardia intestinalis: aphidicolin influence on the trophozoite cell cycle 
Exp. Parasitol., 124, 159-166 (2010).
15. Huebner, K. et al., The role of deletions at the FRA3B/FHIT locus in carcinogenesis. 
16. Drusco, A. et al., Common fragile site tumor suppressor genes and corresponding mouse models of cancer. 