DNA BINDING STUDIES OF CLODINAFOP-PROPARGYL

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Pesticides have been extensively applied in recent decades in agriculturel throughout the world. They are powerful toxicants which are easily absorbed and tend to accumulate onto the soil, plants, foods, ground and surface waters. the in vitro genotoxicity study of organochloro herbicides is very lack. So The objective of the present study was to evaluate the genotoxic effects of the Clodinafop-propargyl (CP), which is widely used in pest-control programs in agriculture and in public health as well.CP classified as "likely to be carcinogenic to humans" by the oral route based on the occurrence of prostate tumors in male rats, ovarian tumors in female rats, and liver tumors in both sexes of mice, as well as blood vessel tumors in female mice. [1] This compound is hydrolyzed within plant tissues to release the phytotoxic acid or alcohol.[2] It also targets the fatty acid biosynthetic pathway of grasses by inhibiting the plastid form of the enzyme acetyl- CoA carboxylase (ACCase; EC 6.4.1.2).[3]

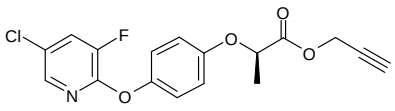

Fig.1

In this study, we report the spectrophotometry and DNA melting studies and it's DNA binding properties in HEPES buffer (PH=7.2), has been monitored as a function of CP-DNA molar ratio, by. It is found that CP molecules could intercalate between base pairs of DNA, as are evidenced by: hyperchromism in UV absorption band of DNA and increase of the DNA melting temperature, Tm, of about 15°C when molar ratio of [CP]/[DNA] is 1. These results Tm are due to the stabilization of the DNA helix in the presence of intercalative CP. [4] In the UV absorption spectra of DNA recorded in the presence of increasing amounts of CP, represent a significant hyperchromic effects and red shift (~7 nm) centered at the 258 nm. These results indicated the conformation of DNA double-helix structure was damage after CP binding to DNA due to the intercalating reactions and proved that the opening of the dsDNA helix occurred.[5]

Keywords: Clodinafop-propargyl, CT-DNA, spectrophotometry, Intercalative

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