



BPDE (8E11): sc-52624

BACKGROUND

Benzopyrene-7,8-diol-9,10-epoxide (BPDE) is a five-ring polycyclic aromatic hydrocarbon that is mutagenic and highly carcinogenic. BPDE is a product of incomplete combustion found in coal tar, automobile exhaust fumes, tobacco smoke and in charbroiled food. BPDE is first activated by cytochrome P4501A1 to form +benzo[a]pyrene 7,8-oxide which is then metabolized by epoxide hydrolase to yield (-)-benzo[a]pyrene-7,8-dihydrodiol. This product forms the ultimate carcinogen after reacting with cytochrome P4501A1 to yield benzo[a]pyrene diol epoxide. The two carbons of the epoxide are electrophilic, and this molecule intercalates and distorts DNA, covalently bonding to the nucleophilic guanine nucleobases at the N2 position. BPDE causes an increased number of micronuclei and apoptosis in cells and eventually causes many types of cancer, especially lung.

REFERENCES

1. Santella, R.M., Lin, C.D., Cleveland, W.L. and Weinstein, I.B. 1984. Monoclonal antibodies to DNA modified by a benzo[a]pyrene diol epoxide. *Carcinogenesis*. 5: 373-377.
2. Yamato, I. 1992. Membrane assembly of lactose permease of *Escherichia coli*. *J. Biochem.* 111: 444-450.
3. Mumford, J.L., Williams, K., Wilcosky, T.C., Everson, R.B., Young, T.L. and Santella, R.M. 1996. A sensitive color ELISA for detecting polycyclic aromatic hydrocarbon-DNA adducts in human tissues. *Mutat. Res.* 359: 171-177.
4. Santella, R.M., Gammon, M.D., Zhang, Y.J., Motykiewicz, G., Young, T.L., Hayes, S.C., Terry, M.B., Schoenberg, J.B., Brinton, L.A., Bose, S., Teitelbaum, S.L. and Hibshoosh, H. 2000. Immunohistochemical analysis of polycyclic aromatic hydrocarbon-DNA adducts in breast tumor tissue. *Cancer Lett.* 154: 143-149.
5. Lodovici, M., Luceri, C., Guglielmi, F., Bacci, C., Akpan, V., Fonnesu, M.L., Boddi, V. and Dolara, P. 2004. Benzo(a)pyrene diolepoxide (BPDE)-DNA adduct levels in leukocytes of smokers in relation to polymorphism of CYP1A1, GSTM1, GSTP1, GSTT1, and mEH. *Cancer Epidemiol. Biomarkers Prev.* 13: 1342-1348.
6. Bi, X., Slater, D.M., Ohmori, H. and Vaziri, C. 2005. DNA polymerase κ is spe epoxide (BPDE)-induced S-phase checkpoint. *J. Biol. Chem.* 280: 22343-22355.
7. Lee, B.M., Kwack, S.J. and Kim, H.S. 2005. Age-related changes in oxidative DNA damage and benzo(a)pyrene diolepoxide-I (BPDE-I)-DNA adduct levels in human stomach. *J. Toxicol. Environ. Health Part A* 68: 1599-1610.
8. Porter, P.C., Mellon, I. and States, J.C. 2005. XP-A cells complemented with Arg228Gln and Val234Leu polymorphic XPA alleles repair BPDE-induced DNA damage better than cells complemented with the wild type allele. *DNA Repair* 4: 341-349.
9. Wilms, L.C., Hollman, P.C., Boots, A.W. and Kleinjans, J.C. 2005. Protection by quercetin and quercetin-rich fruit juice against induction of oxidative DNA damage and formation of BPDE-DNA adducts in human lymphocytes. *Mutat. Res.* 582: 155-162.

SOURCE

BPDE (8E11) is a mouse monoclonal antibody raised against BPDE-I-G.

PRODUCT

Each vial contains 200 μ g IgG₁ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

BPDE (8E11) is recommended for detection of BPDE of NA origin by solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

STORAGE

Store at 4° C, ****DO NOT FREEZE****. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.