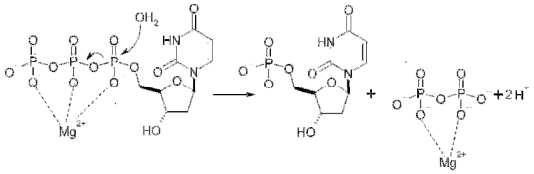
Proteom Services

Material Information Sheet

Deoxyuridine triphosphate nucleotidohydrolase
(**dUTPase**) E.C. number: 3.6.1.23
From ***Homo sapiens*, nuclear isoform**
Recombinant, expressed in *Escherichia coli*
To be stored at -20^{0}C

What is it?
dUTPase specifically hydrolyzes the α-β pyrophosphate bond of dUTP to yield dUMP and inorganic pyrophosphate (PPi) [1].

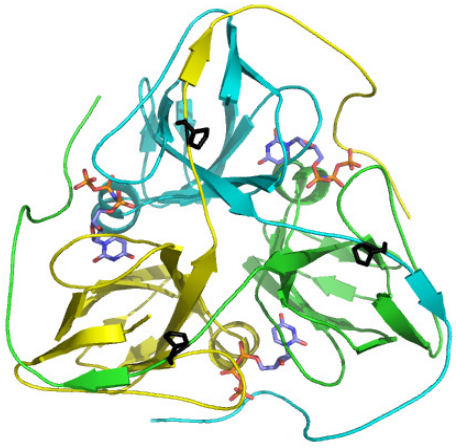


dUTP dUMP PPi

The enzyme is essential in maintaining DNA integrity. It keeps the cellular dUTP:dTTP concentration ratio at a low level (1:24), thus preventing uracil incorporation into DNA. High levels of uracil in DNA trigger double-strand breaks and lead to cell death. dUTPase upregulation desensitizes tumors to drugs inhibiting the thymidylate synthase pathway, thus acting as an important survival factor for tumor cells.

dUTPase is extremely specific for its substrate nucleotide, potentially allowing construction of substrate analogue antagonists with similarly high specificity. The enzyme is an important focus in biomedical research and serves as a model system for detailed analysis of enzyme-catalyzed nucleotide pyrophosphorolysis.

How to use it?
Assay conditions: use buffers around pH 7.5 (TES, Hepes, or similar). Mg^{2+} is a co-factor – use it around 5 mM concentration. KCl or NaCl at 150 mM is also helpful. DTT or other reducing agent is not essential.
Several assays are reported [2-4].
Specific Activity: ≥ 3 units per mg protein
Unit definition: One unit will convert 1.0 µmole of dUTP into dUMP and PPi per 1 minute at 25 ^{0}C, under optimal assay conditions.



Structure of human dUTPase: a homotrimer with three intertwined active sites [5].

How NOT to use it?
This product is for R&D use only, not for drug, household, or other uses. Please observe safe handling practices as usual in molecular biology.

What does it contain?
The protein solution is in aqueous buffer at pH 7.5, with 5 mM Mg^{2+} and 50% glycerol.

Protein concentration is 3-8 mg/ml.

Purity: ≥90% (SDS-PAGE)

What to read if in doubt?
(1) Vertessy, B. G., Toth, J. *Acc Chem Res, in press* **2008**.
(2) Varga, B.; et al. *Biochem Biophys Res Commun* **2008**, *373*, 8-13.
(3) Kovari, J.; et al. *J Biol Chem* **2004**, *279*, 17932-44.
(4) Vertessy, B. G. *Proteins* **1997**, *28*, 568-79.
(5) Varga, B.; et al. *FEBS Lett* **2007**, *581*, 4783-8.