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JAPAN MADE QUALITY

Cell-based GSTs Activity Assay Reagent

DNs-Rh

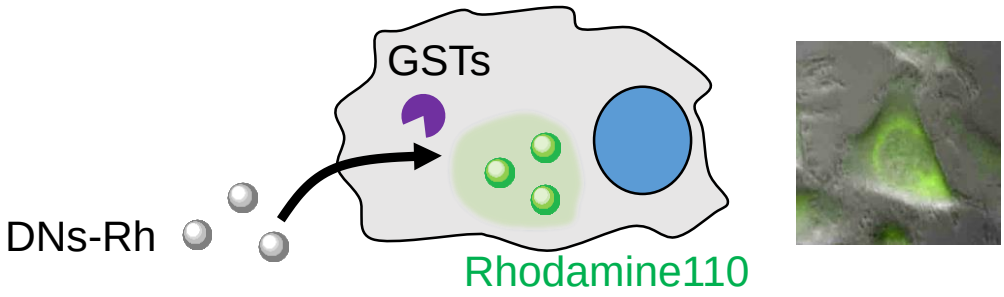
For more information : https://www.funakoshi.co.jp/exports_contents/81304

DNs-Rh is a novel fluorogenic substrate for GSTs (Glutathione *S*-Transferases). Compared to conventional reagents, DNs-Rh can be used for live cell imaging with high specificity and sensitivity.

This product has been commercialized under the license from Nagoya University.

Probe		DNs-Rh	Conventional method (CDNB)
Detection Method		Green Fluorescence	UV
Application	Live Cell Imaging	Yes	No
	Flow Cytometry	Yes	No
Sensitivity		High	Low
Throughput		High	Low
Specificity		High	Low
Co-staining		Yes	No

Principle



Application

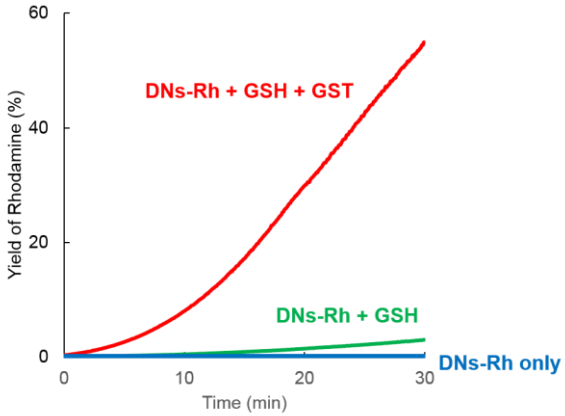
- Intracellular GST activity assay in live cells (Imaging or flow cytometry)
  Note : Commercial FITC filter sets are compatible.
- *in vitro* GST activity assay
  Note : Broad specificity for GST family

Product Information

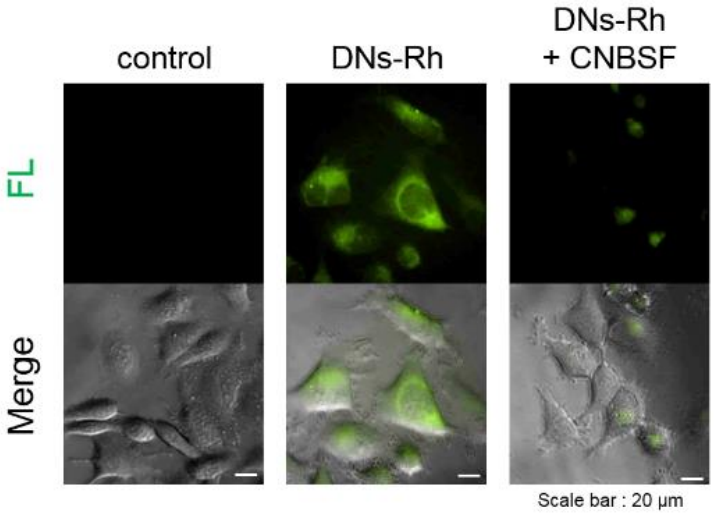
[Manufacturer : FNA]

Product Name	Code	Size	Storage
DNs-Rh <Cell-based GST Activity Assay Reagent>	FDV-0030	0.1 µmol	-20℃

Example Data



▲ Fig.1 *in vitro* GST activity assay
Assay solution containing 1 μM DNs-Rh, 1 mM GSH and 10 μg/ml recombinant human GSTP1-1 was incubated at 37℃ for 30 min. DNs-Rh only showed no fluorescence. In the presence of both GSTP1-1 and GSH, fluorescence was dramatically increased and about 60% of DNs-Rh was converted to rhodamine 110 at 30 min. However, in the absence of GSTP1, fluorescent change by the free thiol of GSH was much slow (3% at 30 min).



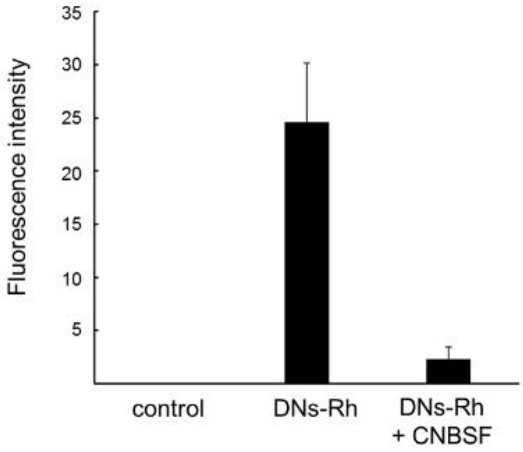


Fig.2 Monitoring intracellular GST activity in live cells ▶
HeLa cells were treated with 2.5 μM of DNs-Rh for 30 min. In the case of addition of CNBSF, a potent irreversible GST inhibitor, cells were pre-treated with 1 mM CNBSF for 15 min prior to DNs-Rh addition. After DNs-Rh incubation, the cells were washed and observed fluorescent microscopy (Ex. 480 nm / Em. 535 nm). CNBSF is also available from Funakoshi, catalog #FDV-0031 (see right).
NOTE: Using this probe, you can observe the intracellular localization of rhodamine 110 converted from DNs-Rh by GSTs. Fluorescent intensity is corresponding to cellular GST activity. However, localization is not equal to localization of GSTs.

[Manufacturer : FNA]

Product Name	Code	Size	Storage
CNBSF <Irreversible GST Inhibitor>	FDV-0031	10 mg	-20℃

Background about GSTs and advantage of DNs-Rh

As many studies suggested, expression level of GSTs is significantly increased in cancer cells, GSTs are considered as anti-cancer drug-resistant enzymes in malignant cancer cells through the neutralization of drugs. To understand biological functions of GSTs, tools for monitoring GST activity are very important. Although several reagents including CDNB (conventional GSTs probe) for this purpose have been developed, no tool to measure intracellular GST activity was commercially available.

DNs-Rh is a novel fluorogenic substrate of GSTs discovered by Dr. Hiroshi Abe, Nagoya University.
This probe emits very low fluorescence (quantum yield = 0.0007) at normal state. After de-protected by thiols, rhodamine 110 is released and exhibits strong fluorescence (quantum yield = 0.645, S/N ratio ~900). DNs-Rh can be used as a fluorogenic GST activity assay probe. An important advantage of this probe is high cell-permeability and this probe is applied to intracellular GST activity under live cell condition. As DNs group is a well characterized substrate for various types of GST members, DNs-Rh is able to monitor pan-GST activity both in cell and in vitro.
DNs-Rh is a powerful tool not only to investigate GST activity in live cell upon any biological stimulation, but also to develop GST inhibitors under live cell condition.

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