Matrix metalloproteinase (MMP) inhibitor profiling kit, fluorometric RED

The MMP inhibitor profiling kit, fluorometric (also known as fluorimetric) RED is a complete assay system designed to examine the specificity of inhibitors against a panel of ten matrix metalloproteinase enzymes, using a quenched fluorogenic substrate OMNIMMP® RED: TQ3-GABA-Pro-Cha-Abu-Smc-His-Ala-Dab(6'-TAMRA)-Ala-Lys-NH_2 [TQ3=quencher; GABA=4-aminobutyric acid; Cha=L-cyclohexylalanine; Abu=2-aminobutyric acid; Smc=S-methyl-L-cysteine; Dab=2,4-diaminobutyric acid; 6'-TAMRA=6'-tetramethylrhodamine]. TAMRA fluorescence is thoroughly quenched by the TQ3 group until cleavage by MMPs separates the two moieties.

The assays are performed in a convenient 96-well microplate format. The compound NNGH is also included as a prototypic control inhibitor.

The matrix metalloproteinases, or MMPs, are extracellular proteases that function at a neutral pH to cleave a wide variety of substrates. These include basement membrane and extracellular matrix components, growth and death factors, cytokines, and cell and matrix adhesion molecules. The broad range of substrate specificities and expression patterns of MMPs results in their involvement in many different processes, both normal and pathological. Aberrant expression has been noted in cancer, angiogenesis, arthritis, inflammation, periodontal disease, emphysema, multiple sclerosis, pre-eclampsia, and chronic wounds, among others. The general structure of an MMP protein consists of a pre domain to direct secretion from the cell, a pro domain, a catalytic domain, and a C-terminal hemopexin domain. The catalytic site involves a coordinately-bound zinc ion. The inactive, or zymogen, form of the enzyme is activated by disruption of one of the coordinate bonds, usually via proteolytic removal of the pro domain.

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BML-AK308-0001	96 wells

Manuals, SDS & CofA View Online »

Handling & Storage

Handling	Avoid freeze/thaw cycles.
Long Term Storage	-80°C
Shipping	Dry Ice

Regulatory Status

RUO - Research Use Only

Product Details

Application	Activity assay, Fluorescent detection, HTS
Application Notes	Designed to examine the specificity of inhibitors against a panel of ten matrix metalloproteinase enzymes, using a quenched fluorogenic peptide.
Contents	10 vials (10 MMP enzymes) 1 vial Substrate (OMNIMMP® RED) 1 vial 6′-TAMRA calibration standard 1 vial control inhibitor (NNGH) 2 bottles (20 ml each) assay buffer 1 black 96-well microplate Instructions

Technical Info / Product Notes

NCBI Reference Sequence: NM_002429, NM_004530, NM_002422, NM_002423, NM_002424, NM_004994, NM_002425, NM_002426, NM_002427, NM_004995

The OMNIMMP® RED substrate offers key advantages over other MMP substrates.

1. Emission at the red end of the spectrum (576 nm after excitation at 545 nm) avoids the interference at lower wavelengths often exhibited by screening compounds, and by substances commonly found in biological samples and tissue culture medium.
2. MMP substrate peptides display poor aqueous solubility, often with K_ms near their limits of solubility, making enzyme and inhibitor kinetics difficult. MMP K_ms for OMNIMMP® RED substrate are below its solubility limit.
3. In addition to the efficient binding as exhibited by low K_ms, OMNIMMP® RED is avidly cleaved by MMPs, with k_{cat}/K_ms in the range of 10^4-10^6 M^{-1} sec^{-1}.
4. The ultra-strong fluorescence of OMNIMMP® RED allows for substrate concentrations much lower than the K_m, a condition generally desirable in inhibitor screening assays.

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