Granzyme B (GrB) is single chain and single domain serine protease. GrB is member of the chymotrypsin superfamily. GrB is synthesized as an inactive preproenzyme and transported into the endoplasmic reticulum (ER) as proGrB. ProGrB, covalently modified with a mannose-6-phosphate (M6P) group, is transported in ER-derived vesicles to the Golgi apparatus (GA). Within the secretory granules, granzymes are stored in association with the chondroitin sulphate containing proteoglycan serglycin (SG). The GrB molecule alone has a high positive surface charge, but when GrB binds to SG its charge may be substantially neutralized (1, 2, 3, 4).

The newly synthesized GrB is heterogeneously glycosylated. The mature enzyme has two potential glycosylation sites. The process of GrB glycosylation results in generation of both the 32 and 35 kDa glycosylated forms, which possess only the complex oligosaccharide moieties and accumulate in cytotoxic T lymphocytes (CTLs) after T cell receptor (TCR) stimulation. In contrast, the 35 kDa pro-apoptotic pathways by direct proteolysis. This mechanism implies activation of several pro-apoptotic pathways by direct proteolysis. The mannose 6-phosphate receptor has been identified as the plasma membrane receptor for GrB (6, 8).

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This reagent is stable up to the expiration date when stored at 2 – 8°C. Do not freeze. This monoclonal antibody may be used directly from the vial. Bring reagent to 18 – 25°C prior to use.


**SELECTED RESEARCH REFERENCES**

**SPECIFICITY**

Granzyme B (GrB) is single chain and single domain serine protease. GrB is member of the chymotrypsin superfamily. GrB is synthesised as an inactive preproenzyme and transported into the endoplasmic reticulum (ER) as proGrB. ProGrB, covalently modified with a mannose-6-phosphate (M6P) group, is transported in ER-derived vesicles to the Golgi apparatus (GA). Within the secretory granules, granzymes are stored in association with the chondroitin sulphate containing proteoglycan serglycin (SG). The GrB molecule alone has a high positive surface charge, but when GrB binds to SG its charge may be substantially neutralized (1, 2, 3, 4).

The newly synthesised GrB is heterogeneously glycosylated. The mature enzyme has two potential glycosylation sites. The process of GrB glycosylation results in generation of both the 32 and 35 kDa glycosylated forms, which possess only the complex oligosaccharide moieties and accumulate in cytotoxic T lymphocytes (CTLs) after T cell receptor (TCR) stimulation. In contrast, the 35 kDa GrB forms contain high mannose oligosaccharide groups, are not stored in CTLs and instead they are secreted through the constitutive calcium-independent secretory pathway after TCR activation (4, 5, 6).

GrB is the most abundant serine protease stored in secretory granules of CTLs and NK cells. GrB can be produced by plasmacytoid dendritic cells (pDCs) (7). GrB-induced cell death is a primary mechanism in cytotoxic T lymphocytes (CTLs) and natural killer (NK) cells to eliminate harmful target cells including allogeneic, virally infected and tumor cells.


10. Wagner et al., Expression of granzyme B in peripheral blood polymorphonuclear neutrophils (PMN), myeloid cell lines and in PMN derived from haemopoietic stem cells in vitro, Molecular Immunology 2008, 45, 1761–1766.


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IMMUNOTECH SAS
a Beckman Coulter Company
130, avenue de Lattre de Tassigny
B.P. 177 - 13276 Marseille Cedex 9
France

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