PRODUCT INFORMATION

$sPLA_2$ (human, recombinant Type IIA)

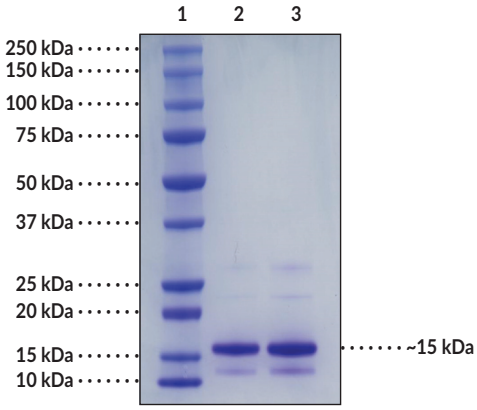
Item No. 10206

Overview and Properties

Synonyms:	GIIC $sPLA_2$, Group IIA phospholipase A_2, Non-Pancreatic Secretory Phospholipase A_2, Phosphatidylcholine 2-Acylhydrolase 2A, PLA2G2A, Secretory Phospholipase A_2 (Group IIA), $sPLA_2$-IIA
Source:	Active recombinant human $sPLA_2$ (Type IIA) expressed in *E. coli*
Amino Acids:	1-124; variant N1A
Uniprot No.:	P14555
Molecular Weight:	13.9 kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	≥85% estimated by SDS-PAGE
Supplied in:	50 mM Tris-HCl, pH 7.6, with 100 mM sodium chloride and 10 mM calcium chloride
Protein Concentration:	***batch specific*** mg/ml
Activity:	***batch specific*** U/ml
Specific Activity:	***batch specific*** U/mg
Unit Definition:	One unit is defined as the amount of enzyme required to hydrolyze 1 nmol of diheptanoyl thio-PC per minute at 37°C in 25 mM Tris-HCl, pH 7.5, containing 10 mM calcium chloride, 100 mM potassium chloride, 0.3 mM Triton X-100, 0.44 mM DTNB, and 1.48 mM diheptanoyl thio-PC.

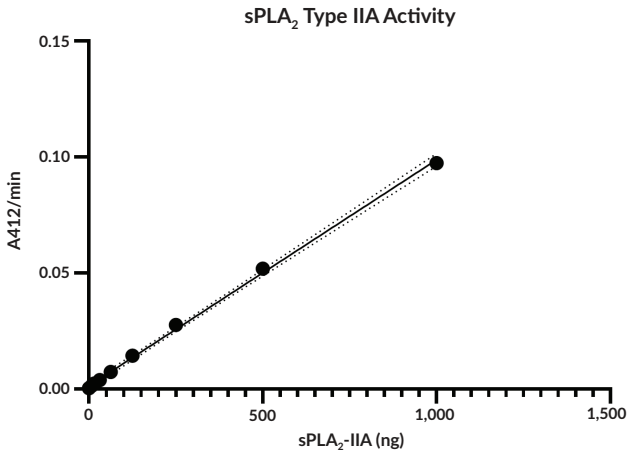
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images



Lane 1: MW Markers
Lane 2: $sPLA_2$ (2 µg)
Lane 3: $sPLA_2$ (4 µg)

SDS-PAGE Analysis of $sPLA_2$.



$sPLA_2$ Type IIA activity was determined using Cayman's $sPLA_2$ Assay Kit (Item No. 765001) with 1.48 mM diheptanoyl thio-PC as the substrate.

WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent *via* email to your institution.

WARRANTY AND LIMITATION OF REMEDY
Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

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Description

Secretory phospholipase A_2 ($sPLA_2$) (Type IIA) is a calcium-dependent PLA_2 superfamily member that is encoded by *PLA2G2A* in humans.[1] It is composed of a highly-conserved calcium-binding loop, a catalytic domain, $sPLA_2$ Type I- and II-specific disulfides that provide stability, and a C-terminal extension but lacks the N-terminal signal peptide found in $sPLA_2$ (Type IB) and $sPLA_2$ (Type X). $sPLA_2$ (Type IIA) is expressed in platelets, synovial fluid, vascular smooth muscle cells, adipose tissue, the liver, and the gut.[2,3] $sPLA_2$ (Type IIA) functions in a cell- and tissue type-specific manner, preferentially hydrolyzing bacterial membrane phosphatidylglycerol (PG) and phosphatidylethanolamine (PE) as a mechanism of host defense. $sPLA_2$ (Type IIA) is upregulated at sites of acute and chronic inflammation where it generates lysophosphatidic acid and arachidonic acid, which is further metabolized to inflammatory lipid mediators and a variety of eicosanoid autocrine and paracrine signaling molecules.[4] Plasma levels of $sPLA_2$ (Type IIA) are associated with the presence of sepsis and are increased in patients with rheumatoid arthritis, acute coronary syndrome, asthma, or inflammatory bowel disease (IBD). Cayman's $sPLA_2$ (human, recombinant Type IIA) protein contains an asparagine to alanine substitution at position 1 to ensure proper removal of the N-terminal methionine during protein expression. Cayman's $sPLA_2$ (human, recombinant Type IIA) can be used for enzyme activity assays. The specific activity of Cayman's $sPLA_2$ (human, recombinant Type IIA) was established using Cayman's $sPLA_2$ Assay Kit (Item No. 765001) with 1.48 mM 1,2-*bis*(heptanoylthio) glycerophosphocholine (Item No. 62235) as the substrate.

References

1. Murakami, M., Taketomi, Y., Sato, H., *et al.* Secreted phospholipase A_2 revisited. *J. Biochem.* **150(3)**, 233-255 (2011).
2. Kuefner, M.S., Stephenson, E., Savikj, M., *et al.* Group IIA secreted phospholipase A2 (PLA2G2A) augments adipose tissue thermogenesis. *FASEB J.* **35(10)**, e21881 (2021).
3. Cupillard, L., Koumanov, K., Mattéi, M.G., *et al.* Cloning, chromosomal mapping, and expression of a novel human secretory phospholipase A_2. *J. Biol. Chem.* **272(25)**, 15745-15752 (1997).
4. Scott, K.F., Mann, T.J., Fatima, S., *et al.* Human group IIA phospholipase A_2-Three decades on from its discovery. *Molecules* **26(23)**, 7267 (2021).

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