PRODUCT INFORMATION

Citrullinated Interleukin-6 (human, recombinant)

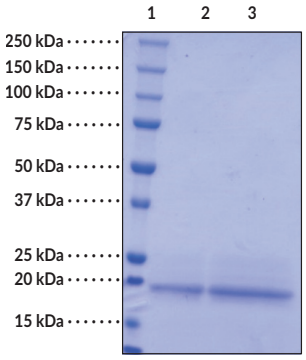
Item No. 30173

Overview and Properties

Synonyms:	B Cell Stimulatory Factor 2, BSF-2, CDF, CTL Differentiation Factor, HGF, Hybridoma Growth Factor, IFN-β2, IL-6, Interferon-β2
Source:	Recombinant human N-terminal His-tagged IL-6 expressed in HEK293 cells, citrullinated by PAD4
Amino Acids:	30-212
Uniprot No.:	P05231
Molecular Weight:	20.9 kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	***batch specific*** (≥85% estimated by SDS-PAGE)
Supplied in:	50 mM HEPES, pH 8.0, with 150 mM sodium chloride, 10% glycerol, 2 mM β-mercaptoethanol
Endotoxin Testing:	<1.0 EU/µg, determined by the LAL endotoxin assay
Protein Concentration:	***batch specific*** mg/ml

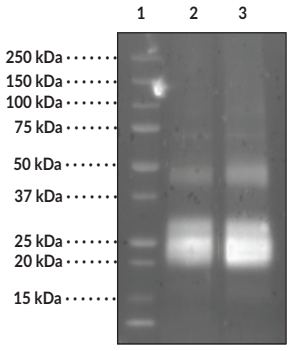
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images



Lane 1: MW Markers
Lane 2: Citrullinated IL-6 (2 µg)
Lane 3: Citrullinated IL-6 (4 µg)

SDS-PAGE Analysis of Citrullinated IL-6.



Lane 1: MW Markers
Lane 2: Interleukin-6
Lane 3: Citrullinated IL-6

Analysis of IL-6 Citrullination. IL-6 and citrullinated IL-6 were reacted with Cayman's Citrulline-specific Probe-biotin (Item No. 17450) and detected using Streptavidin:HRP (Item No. 16747).

Identification of modified sites in Citrullinated IL-6 (Item No. 30173). Citrullinated IL-6 was detected by LC-MS/MS and analyzed using Mascot and Scaffold PTM software. Deiminated arginines are indicated in teal.

Citrullination sites shown are representative of typical results. Batch-to-batch variations may occur.

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Description

Interleukin-6 (IL-6) is a cytokine encoded by the *IL6* gene in humans with roles in both the initiation and resolution of inflammatory responses.[1,2] IL-6 is produced in response to an inflammatory event, induces recruitment of neutrophils to the site of inflammation, and signals through the membrane-bound IL-6 receptor (IL-6R) to upregulate the synthesis of acute phase proteins, lipolysis in the liver, and induced differentiation of T and B cells. Following initiation of this classical signaling pathway, a soluble form of IL-6R (sIL-6R) is released from neutrophils to promote recruitment of monocytes and macrophages, induction of fever *via* IL-6 action in the hypothalamus, and production of anti-inflammatory M2 macrophages to initiate tissue repair. Production of IL-6 is dysregulated in various chronic inflammatory diseases, including rheumatoid arthritis, Castleman disease, polymyalgia rheumatica, and giant cell arteritis.[3] It also induces tumor growth and metastasis *via* activation of JAK/STAT signaling.[4] Recombinant human IL-6 can be citrullinated at arginine residues by protein arginine deiminase 4 (PAD4) *in vitro*.[5] Citrullinated IL-6 and anti-citrullinated peptide antibodies (ACPAs) reactive with citrullinated IL-6 have been found in synovial fluid and sera, respectively, from patients with rheumatoid arthritis. This product contains purified IL-6 (human, recombinant) (Item No. 30174) that has been modified with PAD4 enzyme, which is subsequently depleted by affinity chromatography.

References

1. Del Giudice, M. and Gangestad, S.W. Rethinking IL-6 and CRP: Why they are more than inflammatory biomarkers, and why it matters. *Brain Behav. Immun.* **70**, 61-75 (2018).
2. Rose-John, S. Interleukin-6 family cytokines. *Cold Spring Harb. Perspect. Biol.* **10(2)**, (2018).
3. Schett, G. Physiological effects of modulating the interleukin-6 axis. *Rheumatology (Oxford)* **57(suppl 2)**, ii43-ii50 (2018).
4. Lacina, L., Brábek, J., Král, V., *et al.* Interleukin-6: A molecule with complex biological impact in cancer. *Histol. Histopathol.* **34(2)**, 125-136 (2019).
5. Lu, C., Ohara, R., Campbell, P., *et al.* Citrullination of interleukin 6 augments its pro-inflammatory capacity and signaling potency through interleukin-6 receptor in rheumatoid arthritis [abstract]. *Arthritis Rheumatol.* **71 (suppl 10)** (2019).

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