

## Recombinant Human BD-4

### Information

<b>Gene ID</b>	140596
<b>Accession #</b>	Q8WTQ1
<b>Alternate Names</b>	Defensin beta4
<b>Source</b>	<i>Escherichia coli</i> .
<b>M.Wt</b>	Approximately 6.0 kDa, a single non-glycosylated polypeptide chain containing 50 amino acids.
<b>AA Sequence</b>	EFELDRICGY GTARCRKKCR SQEYRIGRCP NTYACCLRKW DESLLNRTKP
<b>Appearance</b>	Sterile Filtered White lyophilized (freeze-dried) powder.
<b>Stability &amp; Storage</b>	Use a manual defrost freezer and avoid repeated freeze-thaw cycles. - 12 months from date of receipt, -20 to -70 °C as supplied. - 1 month, 2 to 8 °C under sterile conditions after reconstitution. - 3 months, -20 to -70 °C under sterile conditions after reconstitution.
<b>Formulation</b>	Lyophilized from a 0.2 µm filtered concentrated solution in 20 mM PB, pH 7.4, 130 mM NaCl.
<b>Reconstitution</b>	We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Reconstitute in sterile distilled water or aqueous buffer containing 0.1 % BSA to a concentration of 0.1-1.0 mg/mL. Stock solutions should be apportioned into working aliquots and stored at ≤ -20 °C. Further dilutions should be made in appropriate buffered solutions.
<b>Biological Activity</b>	Fully biologically active when compared to standard. The biological activity determined by a chemotaxis bioassay using human monocytes is in a concentration range of 0.1-100.0 ng/ml.
<b>Shipping Condition</b>	Gel pack.
<b>Handling</b>	Centrifuge the vial prior to opening.
<b>Usage</b>	For Research Use Only! Not to be used in humans.

### Components and Storage

Components	5 µg	100 µg	500 µg
Recombinant Human BD-4	5 µg	100 µg	500 µg

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## Quality Control

Purity	> 98 % by SDS-PAGE and HPLC analyses.
Endotoxin	Less than 1 EU/ $\mu$ g of rHuBD-4 as determined by LAL method.

## Description

Defensins (alpha and beta) are cationic peptides with antimicrobial activity against Gram-negative and Gram-positive bacteria, fungi, and enveloped viruses. They are 2-6 kDa proteins and take important roles in innate immune system. On the basis of their size and pattern of disulfide bonding, mammalian defensins are classified into alpha, beta and theta categories.  $\beta$ -defensins contain a six-cysteine motif that forms three intra-molecular disulfide bonds. Four human  $\beta$ -defensins have been identified and they are expressed on some leukocytes and at epithelial surfaces. Because  $\beta$ -defensins is cationic peptides, they can therefore interact with the membrane of invading microbes, which are negative due to lipopolysaccharides (LPS) and lipoteichoic acid (LTA) found in the cell membrane. Especially, they have higher affinity to the binding site compared to  $\text{Ca}^{2+}$  and  $\text{Mg}^{2+}$  ions. Furthermore, they can affect the stability of the membrane.

## Reference

1. Musumeci G, Carnazza ML, Loreto C, et al. 2012. Acta Histochem, 114: 805-12.
2. Biragyn A, Ruffini PA, Leifer CA, et al. 2002. Science, 298: 1025-9.
3. Otte JM, Neumann HM, Brand S, et al. 2009. Eur J Clin Invest, 39: 126-38.

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