

## CERTIFICATE OF ANALYSIS – TECHNICAL DATA SHEET

<b>Product name</b>	HNP1-3, Human, Natural		
<b>Catalog number</b>	HC4014		
<b>Lot number</b>	-	<b>Expiry date</b>	-
<b>Volume</b>	Reconstitute the vial by injection of 1 ml LPS-free sterile 0.01% acetic acid in distilled or de-ionized water	<b>Activity</b>	N.A.
<b>Formulation</b>	lyophilized from evaporated solvent containing no stabilizers or any substance other than HNP.	<b>Amount</b>	>100 µg
<b>Host Species</b>	Human, isolated from pooled azurophilic granules of neutrophils from healthy blood donors.	<b>Concentration</b>	N.A.
<b>Endotoxin</b>	<24 EU/mg	<b>Purification</b>	N.A.
<b>Storage</b>	4°C	<b>Purity</b>	N.A.

### Application notes

	IHC-F	IHC-P	IF	FC	FS	IA	IP	W
Reference #								
Yes					•			
No								
N.D.	•	•	•	•		•	•	•

N.D.= Not Determined; IHC = Immuno histochemistry; F = Frozen sections; P = Paraffin sections; IF = Immuno Fluorescence; FC = Flow Cytometry; FS = Functional Studies; IA = Immuno Assays; IP = Immuno Precipitation; W = Western blot

Human blood test results	
HBsAg	negative
anti-HCV	negative
Anti-HIV 1 and HIV 2	negative

The blood donors have been tested and found negative for various viruses.

Natural HNP represent natural mixture of HNP-1, HNP-2 and HNP-3 (average ratio 5:4:1) isolated from pooled azurophilic granules of neutrophils from healthy blood donors.

- FS: Natural human neutrophil defensin 1-3 can be used for functional studies in vitro. Natural HNP is tested for three major bioactivities described for human alpha-defensins, microbicidity, suramine-sensitive induction of interleukin-8 in bronchial epithelial cell line A-549 and mammalian cell cytotoxicity. In all bioassays performed, HNP showed high bioactivity comparable with those described in cited references. Please pay attention to the fact that HNP are highly cationic and adsorptive to other proteins and substances which can modulate the bioactivity of HNP.

### General Information

<b>Description</b>	Human neutrophil alpha-defensins (Human Neutrophil Peptides, HNP) belong to the family of cationic trisulfide-containing microbicidal peptides. Three highly homologous human defensins stored in azurophilic granules of polymorphonuclear leukocytes (PMN), HNP 1-3, account for about 5% of total PMN protein and comprise about 99% of the total defensin content of the neutrophils with traces of HNP-4. HNP-1, HNP-2 and HNP-3 are encoded by two genes DEFA1 and DEFA3 localized to chromosome 8. Number of gene copies substantially varies between individuals with complete lack of the DEFA3 allele in 10% subjects. DEFA1 and DEFA3 encode identical peptides except the conversion of the first amino acid from alanine in HNP-1 to aspartic acid in HNP-3; HNP-2 represent N-terminally truncated iso-form lacking the first amino acid. HNP 1-3 are capable to kill and/or inactivate a broad spectrum of bacteria, fungi or some enveloped viruses and have recently been shown to exert the anti-HIV activity produced by CD8+ T cells of HIV-nonprogressors. HNP 1-3 have the potential to modulate immune response and inflammation by inducing the chemokine interleukin-8 (IL-8) in epithelial cells and modulating cytokine expression in several cell types and causing chemotaxis to monocytes, T cells and immature dendritic cells. Defensins are relatively resistant to proteolysis, low pH and boiling. Activation of neutrophils leads to rapid release of HNP. HNP can be measured in plasma and other body fluids during infection and inflammation. Micromolar concentrations of HNP are described in septic blood, while in normal plasma very low levels of HNP are present. (HNP 1-3 can be measured using Human Neutrophil Defensin 1-3 (HNP 1-3) ELISA, Cat. # HK317).
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<b>Aliases</b>	Human Neutrophil Defensin
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**References**

1. Ganz, T et al; Defensins. Natural peptide antibiotics of human neutrophils. J Clin Invest 1985, 76: 1427
2. Lichtenstein, A et al; Mechanism of mammalian cell lysis mediated by peptide defensins. Evidence for an initial alteration of the plasma membrane. J Clin Invest 1991, 88: 93
3. Yang, D et al; Multiple roles of antimicrobial defensins, cathelicidins, and eosinophil-derived neutrotoxin in host defense. Annu Rev Immunol 2004, 22: 181
4. Khine, A et al; Human neutrophil peptides induce interleukin-8 production through the P2Y6 signalling pathway. Blood 2006, 107: 2936
5. Linzmeier, R et al; Copy number polymorphisms are not a common feature of innate immune genes. Genomics 2006, 88: 122

**Storage&stability**

Lyophilized product should be stored at 4°C. Under recommended storage conditions, lyophilized product is stable for one year. Liquid HNP in 0.01% acetic acid may be stored for one month at 4°C without loss of bioactivity. If not used within one month store stock solution in aliquots at –20°C. Repeated freeze and thaw cycles will cause loss of activity. Under recommended storage conditions, stock solutions are stable for at least one year.

**Precautions**

Caution: vial is under vacuum. For research use only. Not for use in or on humans or animals or for diagnostics. It is the responsibility of the user to comply with all local/state and federal rules in the use of this product. Hycult Biotech is not responsible for any patent infringements that might result from the use or derivation of this product.

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We hereby certify that the above-stated information is correct and that this product has been successfully tested by the Quality Control Department. This product was released for sale according to the existing specifications. This document has been produced electronically and is valid without a signature.

Approved by Manager of QC  
Robbert Zwinkels

Date  
27/03/2018

Do you have any questions or comments regarding this product? Please contact us via [support@hycultbiotech.com](mailto:support@hycultbiotech.com).