SUMMARY OF PRODUCT

STRUCTURE

Adalimumab, is a fully human IgG1κ antibody against TNF-alpha, is comprised of a tetramer of two heavy and two light chains with one N-glycosylation site per heavy chain.

Adalimumab is produced by recombinant DNA technology in a mammalian CHO (Chinese hamster ovary) cell culture. This cell line does not contain any further genetic modifications allowing this pool to express any other recombinant protein. These cell lines are genetically modified to specifically express both light chains (LC) and heavy chains (HC) of Adalimumab. Adalimumab consists of human-derived heavy and light chain variable regions and human IgG1: constant regions.

The total molecular weight of Adalimumab is ~148 kDa. Each light chain consists of 214 amino acid residues and has a molecular weight of approximately ~ 25 kDa. Each heavy chain consists of 451 amino acid residues and has a molecular weight of approximately ~ 50 kDa.

Adalimumab is a fully human monoclonal antibody of the immunoglobulin G1 (IgG1) subclass expressed in the CHO cell line and consists of 2 heavy chains (HC), and 2 light chains (LC) of the kappa subclass.

Amino Acid Sequence of Adalimumab

The protein is composed of two chains (Heavy and light chains) which are linked by disulphide bonds. The full length monoclonal antibody is produced in CHO cells. The amino acid sequences of the light and heavy chain of the Adalimumab is provided below:

Light Chain (214 amino acids):

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        10         20         30         40         50         60
DIQMTQSPSS LSASVGDRVT ITCRASQGIR NYLAWYQQKP GKAPKLLIYA ASTLQSGVPS
        70         80         90        100        110        120
RFSGSGSGTD FTLTISSLQP EDVATYYCQR YNRAPYTFGQ GTKVEIKRTV AAPSVFIFPP
       130        140        150        160        170        180
SDEQLKSGTA SVVCLLNNFY PREAKVQWKV DNALQSGNSQ ESVTEQDSKD STYSLSSTLT
       190        200        210  214
LSKADYEKHK VYACEVTHQG LSSPVTKSFN RGEC
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Heavy Chain (451 amino acids):

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        10         20         30         40         50         60
EVQLVESGGG LVQPGRSLRL SCAASGFTFD DYAMHWVRQA PGKGLEWVSA ITWNSGHIDY
        70         80         90        100        110        120
ADSVEGRFTI SRDNAKNSLY LQMNSLRAED TAVYYCAKVS YLSTASSLDY WGQGTLVTVS
       130        140        150        160        170        180
SASTKGPSVF PLAPSSKSTS GGTAALGCLV KDYFPEPVTV SWNSGALTSG VHTFPAVLQS
       190        200        210        220        230        240
SGLYSLSSVV TVPSSSLGTQ TYICNVNHKP SNTKVDKKVE PKSCDKTHTC PPCPAPELLG
       250        260        270        280        290        300
GPSVFLFPPK PKDTLMISRT PEVTCVVVDV SHEDPEVKFN WYVDGVEVHN AKTKPREEQY
       310        320        330        340        350        360
N*STYRVVSVL TVLHQDWLNG KEYKCKVSNK ALPAPIEKTI SKAKGQPREP QVYTLPPSRD
       370        380        390        400        410        420
ELTKNQVSLT CLVKGFYPSD IAVEWESNGQ PENNYKTTPP VLDSDGSFFL YSKLTVDKSR
       430        440        451
WQQGNVFSCS VMHEALHNHY TQKSLSLSPGK
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The protein is composed of two chains (Heavy and light chains) which are linked by disulphide bonds.

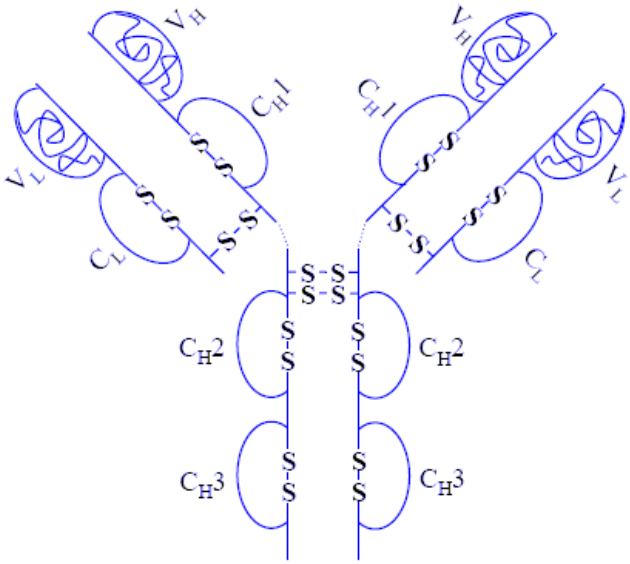
Normal Disulfide bonds:

a) Intrachain

1) LC 23- LC 88 (2)
2) LC 194 – LC 134 (2)
3) HC 22 – HC 96 (2)
4) HC 148 –HC 204 (2)
5) HC 265 –HC 325 (2)
6) HC 371 – HC 429 (2)

b) Interchain

7) LC 214 – HC 224 (2)
8) HC 233 – HC 233
9) HC 230 – HC 230



Structure disulfide bonds of Adalimumab.

Nomenclature information of Adalimumab.

Recommended International Nonproprietary Name (INN)	Adalimumab
Anatomical Therapeutic Chemical (ATC) *code*	L04AB04
Chemical Name	Immunoglobulin G1, anti-(human tumor necrosis factor) (human monoclonal D2E7 heavy chain), disulfide with human monoclonal D2E7 light chain, dimer
Chemical Abstracts Service (CAS) registry number	0331731-18-1
Molecular Formula	C_{6428}-H_{9912}-N_{1694}-O_{1987}-S_{46}
Molecular weight	~ 148 KDa

Name of the medicinal product

CinnoRA 40mg/0.8mL solution for injection in prefilled syringe

Reference Product

Humira from Abbvie

Quantitative and Qualitative composition

Each 0.8 mL single dose syringe contains 40 mg of adalimumab.

Adalimumab is a recombinant human monoclonal antibody expressed in Chinese Hamster Ovary cells.

Each syringe of CinnoRA consist of Sodium chloride, Monobasic Sodium phosphate dihydrate, Dibasic Sodium phosphate dihydrate, Citric acid monohydrate, Tri sodium citrate Dihydrate, Polysorbate 80, Mannitol and water for injections.

Therapeutic indications

Rheumatoid arthritis

Juvenile idiopathic arthritis

Axial spondyloarthritis

Psoriatic arthritis

Psoriasis

Paediatric plaque psoriasis

Hidradenitis suppurativa (HS)

Crohn's disease

Paediatric Crohn's disease

Ulcerative colitis

Uveitis

Paediatric Uveitis

Pharmacological properties

Pharmacotherapeutic group: Immunosuppressants, Tumour Necrosis Factor alpha (TNF-α) inhibitors. ATC code: L04AB04

Route of Administration

SC