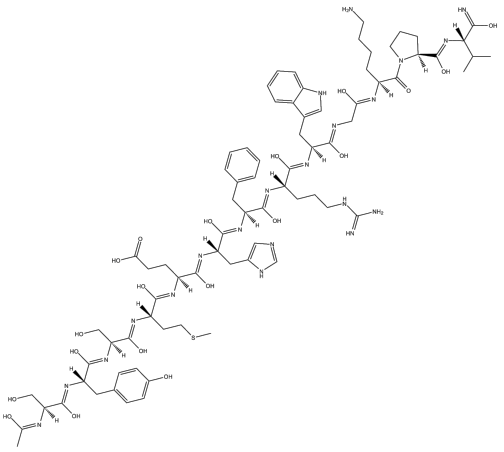
Product Data Sheet

Product Name: α-MSH
Cat. No.: GC14374

Chemical Properties

Cas. No.	581-05-5		
Chemical Name	(4S,5Z,7S,8Z,10S,11Z,13S,14Z,16S,17Z,20Z,22S)-7-((1H-imidazol-5-yl)methyl)-16-((1H-indol-3-yl)methyl)-26-amino-10-benzyl-13-(3-guanidinopropyl)-5,8,11,14,17,20-hexahydroxy-22-((S)-2-((Z)-hydroxy(((S)-1-hydroxy-1-imino-3-methylbutan-2-yl)imino)methyl)pyrro		
SMILES	CC([C@@](/N=C(O)/[C@]1([H])CCCN1C([C@](/N=C(O)/C/N=C(O)/[C@](/N=C(O)/[C@](/N=C(O)/[C@](/N=C(O)/[C@](/N=C(O)/[C@](/N=C(O)/[C@](/N=C(O)/[C@](/N=C(O)/[C@](/N=C(O)/[C@](/N=C(O)/C)([H])CO)([H])CC2=CC=C(O)C=C2)([H])CO)([H])CCSC)([H])CCC(O)=O)([H])CC3=CN=CN3)([H		
Formula	$C_{77}H_{109}N_{21}O_{19}S$	M.Wt	1664.9
Solubility	25mg/ml in Water	Storage	Desiccate at -20°C
General tips	For obtaining a higher solubility , please warm the tube at 37 °C and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20°C for several months.		
Shipping Condition	Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.		
Structure			

Protocol

Caution: Product has not been fully validated for medical applications. For research use only.
Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com
Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

Cell experiment [1]:

Cell lines	B16 melanoma cells
Preparation Method	Cells treated with α-MSH in culture dishes (60 mm) were incubated for 72 h at 37°C in a CO2 chamber.
Reaction Conditions	1 μM; 72h
Applications	α-MSH- stimulates melanin production in B16 melanoma cells.

Animal experiment [2]:

Animal models	Three-week old C57BL/6J male mice
Preparation Method	Mice were injected either PBS or α-MSH (500 nM) intraperitoneally once a day for two days before dark cycle. Inguinal adipose tissue (iWAT) was removed at 0.5 h, 1 h, 2 h, 4 h and 6 h after the last injection from the treatment group.
Dosage form	500 nM ; i.p;0-6 h
Applications	α-MSH promotes fatty acid oxidation in white (WAT) and brown adipose tissue (BAT).

Caution: Product has not been fully validated for medical applications. For research use only.
Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com
Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

References:

[1]. Song HS, Sim SS. Acteoside inhibits alpha-MSH-induced melanin production in B16 melanoma cells by inactivation of adenyl cyclase. J Pharm Pharmacol. 2009 Oct;61(10):1347-51. doi: 10.1211/jpp/61.10.0011. PMID: 19814867.
[2]. Gan L, Liu Z, et,al. α-MSH and Foxc2 promote fatty acid oxidation through C/EBPβ negative transcription in mice adipose tissue. Sci Rep. 2016 Nov 7;6:36661. doi: 10.1038/srep36661. PMID: 27819350; PMCID: PMC5098202.

Background

Alpha-melanocyte-stimulating hormone (α-MSH) is a neuropeptide with immunomodulatory properties that is produced by post-translational processing of proproiomelanocortin (POMC). α-MSH binds to the MC1R receptor on melanocytes to stimulate melanin secretion, promote the formation of melanocyte dendrites, and protect melanocytes. α-MSH has an effective anti-inflammatory effect on immune cells. Moreover, α-MSH was shown to inhibit IFN-γ production in antigen-stimulated T cells[1-3].α-MSH- stimulates(1 μM; 72h) melanin production in B16 melanoma cells[4].α-MSH(0-10 ng/mL; 5-10min) enhances the role of protective responses under stress conditions such as UVR by increasing melanin production and reducing mitochondria-mediated apoptosis[5]. α-MSH(100 nM; 48 h) increased tyrosinase activity and melanin content by 56.5% and 61.7%, respectively, and α-MSH changed the level of metabolites in melanoma cells[6].

α-MSH (1mg / kg; i.v;12 h) can increase bacterial load in middle cerebral artery occlusion (MCAO) mice[7]. α-MSH(500 nM ; i.p;0-6 h) promotes fatty acid oxidation in WAT and BAT[8].

References:
[1]. Ichiyama T, Sato S, et,al. The neuroimmunomodulatory peptide alpha-MSH. Ann N Y Acad Sci. 2000;917:221-6. doi: 10.1111/j.1749-6632.2000.tb05386.x. PMID: 11268347.
[2]. Li C, Wu M, et,al. α- MSH Plays Anti-inflammatory and Anti-fungal Role in Aspergillus Fumigatus Keratitis. Curr Eye Res. 2022 Mar;47(3):343-351. doi: 10.1080/02713683.2021.2006235. Epub 2021 Dec 12. PMID: 34766863.
[3]. Schulte-HerbrÜggen O, Quarcoo D, et,al. Alpha-MSH promotes spontaneous post-ischemic pneumonia in mice via melanocortin-receptor-1. Exp Neurol. 2008 Apr;210(2):731-9. doi: 10.1016/j.expneurol.2008.01.006. Epub 2008 Jan 19. PMID: 18304533.

Product Data Sheet

[4]. Song HS, Sim SS. Acteoside inhibits alpha-MSH-induced melanin production in B16 melanoma cells by inactivation of adenyl cyclase. J Pharm Pharmacol. 2009 Oct;61(10):1347-51. doi: 10.1211/jpp/61.10.0011. PMID: 19814867.
[5]: Choudhary R, Sharma A, et,al. Role of alpha-melanocyte stimulating hormone (α-MSH) in modulating the molecular mechanism adopted by melanocytes of Bos indicus under UVR stress. Mol Cell Biochem. 2020 Feb;465(1-2):141-153. doi: 10.1007/s11010-019-03674-w. Epub 2019 Dec 10. PMID: 31823188.
[6]. Seo SH, Jo JK, et,al. Metabolomics Reveals the Alteration of Metabolic Pathway by Alpha-Melanocyte-Stimulating Hormone in B16F10 Melanoma Cells. Molecules. 2020 Jul 26;25(15):3384. doi: 10.3390/molecules25153384. PMID: 32722640; PMCID: PMC7436294.
[7]. Schulte-HerbrÜggen O, Quarcoo D, et,al. Alpha-MSH promotes spontaneous post-ischemic pneumonia in mice via melanocortin-receptor-1. Exp Neurol. 2008 Apr;210(2):731-9. doi: 10.1016/j.expneurol.2008.01.006. Epub 2008 Jan 19. PMID: 18304533.
[8]. Gan L, Liu Z, et,al. α-MSH and Foxc2 promote fatty acid oxidation through C/EBPβ negative transcription in mice adipose tissue. Sci Rep. 2016 Nov 7;6:36661. doi: 10.1038/srep36661. PMID: 27819350; PMCID: PMC5098202.

Caution: Product has not been fully validated for medical applications. For research use only.
Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com
Address: 10292 Central Ave. #205, Montclair, CA, USA