

# PRODUCT INFORMATION



## MOTS-c (human) (trifluoroacetate salt)

Item No. 29785

<b>Formal Name:</b>	L-methionyl-L-arginyl-L-tryptophyl-L-glutamyl-L- $\alpha$ -glutamyl-L-methionylglycyl-L-tyrosyl-L-isoleucyl-L-phenylalanyl-L-tyrosyl-L-prolyl-L-arginyl-L-lysyl-L-leucyl-L-arginine, monotrifluoroacetate salt	H—Met—Arg—Trp—Gln—Glu—Met—Gly—Tyr—Ile—Phe—
<b>Synonym:</b>	Mitochondrial open reading frame of the 12S rRNA-c	Tyr—Pro—Arg—Lys—Leu—Arg—OH • CF <sub>3</sub> COOH
<b>MF:</b>	C <sub>101</sub> H <sub>152</sub> N <sub>28</sub> O <sub>22</sub> S <sub>2</sub> • CF <sub>3</sub> COOH	
<b>FW:</b>	2,288.6	
<b>Purity:</b>	≥95%	
<b>Supplied as:</b>	A solid	
<b>Storage:</b>	-20°C	
<b>Stability:</b>	≥4 years	

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

### Laboratory Procedures

MOTS-c (human) (trifluoroacetate salt) is supplied as a solid. A stock solution may be made by dissolving the MOTS-c (human) (trifluoroacetate salt) in water. We do not recommend storing the aqueous solution for more than one day.

### Description

MOTS-c is a mitochondrial peptide with diverse biological activities.<sup>1-3</sup> It increases osteogenic differentiation and the formation of calcified nodules in rat bone mesenchymal stem cells (BMSCs) when used at a concentration of 1  $\mu$ M.<sup>1</sup> MOTS-c decreases 5-methyl-tetrahydrofolate levels, blocking *de novo* purine biosynthesis, increases accumulation of 5-aminoimidazole-4-carboxamide ribonucleotide (AICAR; Item No. 10010241), and activates AMPK in HEK293 cells.<sup>2</sup> It increases glycolysis in HEK293 cells in an AMPK-dependent manner. *In vivo*, MOTS-c (0.5 mg/kg per day, i.p.) increases glucose clearance in mice fed a normal diet. It increases skeletal muscle AMPK activation and GLUT4 expression, as well as prevents high-fat diet-induced obesity and hyperinsulinemia in CD-1 mice. MOTS-c (5 mg/kg) increases AMPK activation, reduces protein levels of the angiotensin II type 1 (AT<sub>1</sub>) and endothelin B (ET<sub>B</sub>) receptors and left ventricular posterior wall thickness, and attenuates aortic calcification in a rat model of secondary myocardial remodeling.<sup>3</sup>

### References

- Hu, B.-T. and Chen, W.-Z. MOTS-c improves osteoporosis by promoting osteogenic differentiation of bone marrow mesenchymal stem cells via TGF- $\beta$ /Smad pathway. *Eur. Rev. Med. Pharmacol. Sci.* **22**(21), 7156-7163 (2018).
- Lee, C., Drew, B.G., Sallam, T., *et al.* The mitochondrial-derived peptide MOTS-c promotes metabolic homeostasis and reduces obesity and insulin resistance. *Cell Metabolism* **21**(3), 443-454 (2015).
- Wei, M., Gan, L., Liu, Z., *et al.* Mitochondrial-derived peptide MOTS-c attenuates vascular calcification and secondary myocardial remodeling via adenosine monophosphate-activated protein kinase signaling pathway. *Cardiorenal. Med.* **10**(1), 42-50 (2020).

#### WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

#### SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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