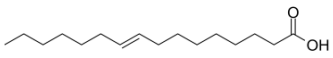
Palmitelaidic Acid

Cat. No.:	HY-N2341
CAS No.:	10030-73-6
Molecular Formula:	$C_{16}H_{30}O_2$
Molecular Weight:	254.41
Target:	AMPK; PPAR; Glucokinase
Pathway:	Epigenetics; PI3K/Akt/mTOR; Cell Cycle/DNA Damage; Metabolic Enzyme/Protease
Storage:	Solution, -20°C, 2 years



SOLVENT & SOLUBILITY

In Vitro	Ethanol : 100 mg/mL (393.07 mM; Need ultrasonic)

BIOLOGICAL ACTIVITY

Description	Palmitelaidic Acid (9-trans-Hexadecenoic acid) is the trans isomer of palmitoleic acid. Palmitoleic acid is one of the most abundant fatty acids in serum and tissue.		
IC_{50} & Target	AMPK	PPARα	Glucokinase
In Vitro	The monounsaturated fatty acid palmitoleate (palmitoleic acid) is one of the most abundant fatty acids in serum and tissues, particularly adipose tissue and liver. Its endogenous production by stearoyl-CoA desaturase 1 gives rise to its cis isoform, cis-palmitoleate. Palmitoleic acid has been correlated with multiple cardiometabolic risk factors, including high blood pressure, total cholesterol, TGs, apoA-I, apoB, and endothelial dysfunction[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.		
In Vivo	Palmitoleic acid promotes a faster uptake of glucose in the body, associated with higher insulin concentration. Palmitoleic acid increases the phosphorylation of AMPK, up-regulates glucokinase and down-regulates SREBP-1. Regarding AMPK downstream, palmitoleic acid increases the production of FGF-21 and stimulates the expression of PPARα[2]. Palmitoleic acid reduces body weight increase, ameliorates the development of hyperglycemia and hypertriglyceridemia, and improves insulin sensitivity. Furthermore, palmitoleic acid down-regulates mRNA expressions of proinflammatory adipocytokine genes (TNFα and resistin) in white adipose tissue and lipogenic genes (SREBP-1, FAS, and SCD-1) in liver[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.		

PROTOCOL

Animal Administration [2]	Mice: Male C57BL/6J wild type and PPARα-KO mice are fed a high-fat diet or a standard diet for 12 weeks. In the last two weeks, the HF-fed mice are treated daily with oleic acid (300 mg/kg of body weight) or palmitoleic acid (00 mg/kg of body weight) by oral gavage. After 12 weeks, the mice are fasted for 6 h, injected with insulin or PBS vehicle. Blood and liver samples are collected and stored for the further analysis of RNA and protein expression[2].

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CUSTOMER VALIDATION

- J Neurosci Res. 2019 Dec;97(12):1689-1705.

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REFERENCES

[1]. Frigolet ME, et al. The Role of the Novel Lipokine Palmitoleic Acid in Health and Disease.

[2]. de Souza CO, et al. Palmitoleic Acid Improves Metabolic Functions in Fatty Liver by PPARα-Dependent AMPK Activation. J Cell Physiol. 2016 Dec 7. doi: 10.1002/jcp.25715.

[3]. Yang ZH, et al. Chronic administration of palmitoleic acid reduces insulin resistance and hepatic lipid accumulation in KK-Ay Mice with genetic type 2 diabetes. Lipids Health Dis. 2011 Jul 21;10:120.

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