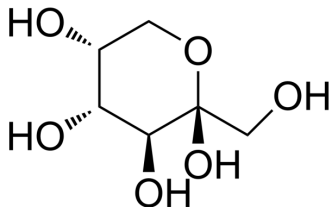
Fructose

Cat. No.:	HY-N0395
CAS No.:	7660-25-5
Molecular Formula:	$C_6H_{12}O_6$
Molecular Weight:	180.16
Target:	Others
Pathway:	Others

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	2 years
	-20°C	1 year



SOLVENT & SOLUBILITY

In Vitro

H_2O : 100 mg/mL (555.06 mM; Need ultrasonic)
DMSO : ≥ 100 mg/mL (555.06 mM)
* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	5.5506 mL	27.7531 mL	55.5062 mL
5 mM	1.1101 mL	5.5506 mL	11.1012 mL
10 mM	0.5551 mL	2.7753 mL	5.5506 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 100 mg/mL (555.06 mM); Clear solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (13.88 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (13.88 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (13.88 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Fructose is a simple ketonic monosaccharide found in many plants, where it is often bonded to glucose to form the disaccharide sucrose.

In Vitro	Fructose, at low concentrations do not cause any significant increase of Tissue factor (TF)-mRNA levels. On the contrary, higher Fructose concentrations cause increase in TF mRNA levels at 60 min, as compare to unstimulated cells. Increasing Fructose concentrations causes significant decrease of tPA-mRNA levels. SOD significantly prevents Fructose induced NF-κB activation which is associated with the parallel reduction of Fructose-induced TF expression/activity[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Fructose can be used in animal modeling to construct models of hyperuricemia and diabetes in rats. In mice fed 0% Fructose, portal (0.060±0.006 mM, overall mean for all time points) and systemic (0.030±0.003 mM) Fructose concentrations do not vary with time after feeding. In contrast, portal concentrations in wild-type mice consuming 20% Fructose increase by more than twofold from time (t)=0 to t=1 h after feeding (~0.13 mM). Likewise, systemic serum Fructose goes from 0.037 at t=0 to 0.13 mM 1 h after feeding. Fasted (t=0) serum Fructose in the 20% group is similar to postprandial concentrations in the 0% mice for both portal and systemic levels, suggesting that the baseline Fructose concentration during fasting is not affected by diet. Serum Fructose concentrations in $KHK^{-/-}$ mice are 5- to 100-fold greater than those in wild-type mice for the same diet, time, and sample location. Mean (for all time points) portal and systemic glucose concentrations in mice fed 20% Fructose are ~3 (P=0.004) and ~2 (P=0.04) mM greater, respectively, than those in mice fed 0%. Systemic Fructose concentrations are approximately threefold greater in $KHK^{-/-}$ mice fed Fructose compare with those fed glucose, but are similar between glucose- and Fructose-fed wild-type mice[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay [1]	HUVECs are incubated with Fructose (0.25, 1 and 2.5 mM) for 30 min. Then, cells are washed with PBS and then fresh medium is added. Total mRNA is extracted by cell cultures using TRIzol reagent, at baseline and 60 min after Fructose stimulation and Tissue factor (TF) mRNA levels are examined by realtime reverse transcription (RT) and polymerase chain reaction (PCR). In positive control experiments, HUVECs are incubated with LPS (50 μg/mL), for 30 min and then mRNA is extracted at 60 min[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [2]	50 young adult (7-wk-old) male C57BL6 wild-type mice (~18 g) are divided into 10 cages and acclimatized to a reversed light cycle. Mice are fed a nonpurified commercial diet ad libitum for the first 4 days. On the 5th day and then throughout the experiment, diets are removed at 2001 (lights on) and returned at 0801 (lights off). For days 8 to 14, diets are switched to pellets containing either 0% Fructose, 10% sucrose, 20% glucose (termed as "0% Fructose") or 20% Fructose, 10% sucrose, or 0% glucose (20% Fructose). On the 15th day, mice are killed at 0800 before feeding and 0900, 1030, 1200, and 1530 during the dark phase, with n=5 for each time point and diet[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Eur J Pharmacol. 2023 Aug 1;175942.

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REFERENCES

[1]. Cirillo P, et al. Fructose induces prothrombotic phenotype in human endothelial cells : A new role for "added sugar" in cardio-metabolic risk. J Thromb Thrombolysis. 2015 Nov;40(4):444-51.

[2]. Patel C, et al. Effect of dietary fructose on portal and systemic serum fructose levels in rats and in KHK-/- and GLUT5-/- mice. Am J Physiol Gastrointest Liver Physiol. 2015 Nov 1;309(9):G779-90.

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