

## Tetramethylpyrazine Datasheet

4<sup>th</sup> Edition (Revised in July, 2016)

### [ Product Information ]

**Name:** Tetramethylpyrazine

**Catalog No.:** CFN99909

**Cas No.:** 1124-11-4

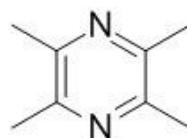
**Purity:** >=98%

**M.F:** C<sub>8</sub>H<sub>12</sub>N<sub>2</sub>

**M.W:** 136.20

**Physical Description:** Powder

**Synonyms:** Ligustrazine; 2,3,5,6-Tetramethylpyrazine; 2,3,5,6-Tetramethyl-1,4-pyrazine.



### [ Intended Use ]

1. Reference standards;
2. Pharmacological research;
3. Synthetic precursor compounds;
4. Intermediates & Fine Chemicals;
5. Others.

### [ Source ]

The rhizome of *Ligusticum chuanxiong* Hort.

### [ Biological Activity or Inhibitors ]

Tetramethylpyrazine (TMP), which is widely used in the treatment of ischemic stroke by

Chinese herbalists; TMP administrated intraperitoneally significantly protected the brain against ischemic insult as evidenced by the reduction in infarction volume, preservation of neurons, and decrease in brain edema, TMP markedly reduced cerebral ischemia/reperfusion-induced inflammatory cell activation and proinflammatory mediator production. Moreover, TMP suppressed lipopolysaccharide/interferon-gamma-induced inflammation and prostaglandin E(2) production in cultured glial cells; suggests that one of neuroprotective effects of TMP against ischemic brain injury might involve its anti-inflammatory potential.<sup>[1]</sup>

Tetramethylpyrazine and ferulic acid may be used as preventive agents against neuronal diseases associated with oxidative stress.<sup>[2]</sup>

Tetramethylpyrazine has antioxidant activity against oxidative stress induced by high glucose in endothelial cells. <sup>[3]</sup>

Tetramethylpyrazine has antiplatelet activity, which mediated through activation of NO synthase; TMPZ at micromolar concentrations can stimulate nitric oxide production in human platelets via a novel mechanism that activated ecNOS protein expression.<sup>[4]</sup>

Tetramethylpyrazine can significantly inhibit the edema induced by carrageenin, the increase of the dye leakage induced by acetic acid and the granuloma formation induced by cotton pellet; it also can inhibit the number of writhes induced by acetic acid; suggests that it has the antiinflammatory effect and the analgesic effect, and it exerts an antiinflammatory effect at the early and the late stages of processes in the inflammatory pathology.<sup>[5]</sup>

The hepatocellular injury induced by thioacetamide (TAA) is mediated by oxidative stress caused by the action of cytokines through lipid peroxidation, TMP appears to act by preventing lipid peroxidation.<sup>[6]</sup>

## **[ Solvent ]**

Chloroform, Dichloromethane, Ethyl Acetate, DMSO, Acetone, etc.

## **[ HPLC Method ]<sup>[7]</sup>**

Mobile phase: Methanol - 1% Acetic acid and 0.05% trifluoroacetic acid in water (pH 2.5)  
=55:45 ;

Flow rate: 1.0 ml/min;

Column temperature: 45 °C;

The wave length of determination: 297 nm.

## **[ Storage ]**

2-8°C, Protected from air and light, refrigerate or freeze.

## **[ References ]**

- [1] Liao S L, Kao T K, Chen W Y, *et al. Stroke; a journal of cerebral circulation*, 2005, 36(3):654-9.
- [2] Zhang Z, Wei T, Hou J, *et al. Eur. J. Pharmacol.*, 2003, 467(1-3):41-7.
- [3] Kang Y, Hu M, Zhu Y, *et al. Life Sci.*, 2009, 84(13-14):428-36.
- [4] Sheu J R, Kan Y C, Hung W C, *et al. Life Sci.*, 2000, 67(8):937-47.
- [5] Ozaki Y. *Chem. Pharm. Bull.*, 1992, 40(4):954-6.
- [6] So E C, Wong K L, Huang T C, *et al. J. Biomed.Sci.*, 2002, 9(5):410-4.
- [7] Chen J C, Chen Q H, Qin G, *et al. Food Chem.*, 2010, 122(4):1247-52.

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