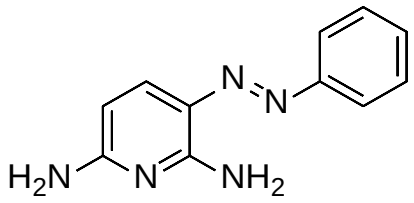
Product data sheet

MedKoo Cat#: 414064 Name: Phenazopyridine Free Base CAS: 94-78-0 (free base) Chemical Formula: $C_{11}H_{11}N_5$ Exact Mass: 213.1014 Molecular Weight: 213.244	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:
Phenazopyridine Free Base is A local anesthetic that has been used in urinary tract disorders. Its use is limited by problems with toxicity (primarily blood disorders) and potential carcinogenicity.

2. CoA, QC data, SDS, and handling instruction
SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
TBD	TBD	TBD

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	4.69 mL	23.45 mL	46.89 mL
5 mM	0.94 mL	4.69 mL	9.38 mL
10 mM	0.47 mL	2.35 mL	4.69 mL
50 mM	0.09 mL	0.47 mL	0.94 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator
Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study
In vitro study

1. Luyts N, Daniluk J, Freitas ACN, Bazeli B, Janssens A, Mulier M, Everaerts W, Voets T. Inhibition of TRPM8 by the urinary tract analgesic drug phenazopyridine. Eur J Pharmacol. 2023 Mar 5;942:175512. doi: 10.1016/j.ejphar.2023.175512. Epub 2023 Jan 16. PMID: 36657655.

2. Preynat-Seauve O, Nguyen EB, Westermaier Y, Héritier M, Tardy S, Cambet Y, Feyeux M, Caillon A, Scapozza L, Krause KH. Novel Mechanism for an Old Drug: Phenazopyridine is a Kinase Inhibitor Affecting Autophagy and Cellular Differentiation. Front Pharmacol. 2021 Aug 4;12:664608. doi: 10.3389/fphar.2021.664608. PMID: 34421588; PMCID: PMC8371461.

In vivo study

1. Wang C, Zhang Y, Zhao D, Huo Y, Xie J, Zhang X, Luo H, Xu H, Zhang YW. Phenazopyridine promotes RPS23RG1/Rps23rg1 transcription and ameliorates Alzheimer-associated phenotypes in mice. Neuropsychopharmacology. 2022 Nov;47(12):2042-2050. doi: 10.1038/s41386-022-01373-7. Epub 2022 Jul 11. PMID: 35821069; PMCID: PMC9556769.

7. Bioactivity
Biological target:
Phenazopyridine Free Base is A local anesthetic that has been used in urinary tract disorders.

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In vitro activity

The effects of PAP (phenazopyridine) on the relevant TRP channels (TRPV1, TRPA1, TRPM8, TRPM3) expressed in HEK293 or CHO cells was investigated using Fura-2-based calcium measurements and whole-cell patch-clamp recordings. PAP rapidly and reversibly inhibits responses of TRPM8 expressed in HEK293 cells to cold and menthol, with IC50 values between 2 and 10 μM. It acts by shifting the voltage dependence of channel activation towards positive potentials, opposite to the effect of menthol. PAP also inhibits TRPM8-mediated, menthol-evoked calcium responses in lumbosacral DRG neurons.

Reference: Eur J Pharmacol. 2023 Mar 5;942:175512. https://pubmed.ncbi.nlm.nih.gov/36657655/

In vivo activity

Importantly, this study demonstrated that phenazopyridine not only promoted RPS23RG1/Rps23rg1 expression, but also reduced AD-like pathologies and cognitive impairments in the APP/PS1 AD model mice. This study also determined a critical negative regulatory domain of RPS23RG1 within nucleotide positions +1177 to +1187 and found that the transcription factor SMAD3 bound to this domain. Inhibition of SMAD3 promoted RPS23RG1 expression. Moreover, phenazopyridine reduced SMAD3 binding to the RPS23RG1 promoter without affecting SMAD3 phosphorylation and nuclear localization.

Reference: Neuropsychopharmacology. 2022 Nov;47(12):2042-2050. https://pubmed.ncbi.nlm.nih.gov/35821069/