



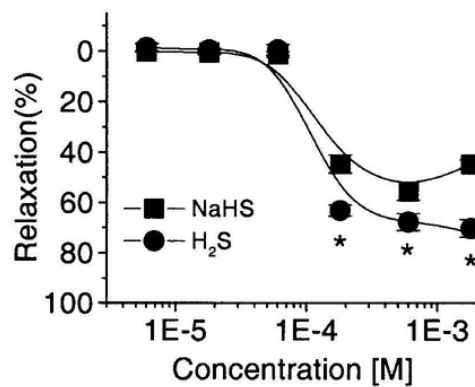
Potassium channels mediate hydrogen sulfide-induced cutaneous vasodilation in healthy young adults.

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Preclinical models suggest hydrogen sulfide modulates vascular function.



Zhao W, Zhang J, Lu Y, and Wang R. The vasorelaxant effect of H₂S as a novel endogenous gaseous K(ATP) channel opener. *The EMBO journal* 20: 6008-6016, 2001.

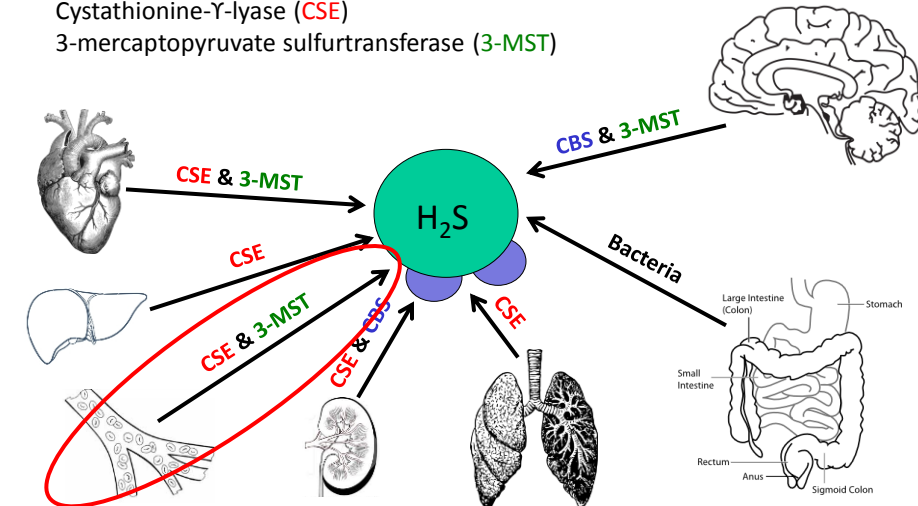


Endogenous hydrogen sulfide production.

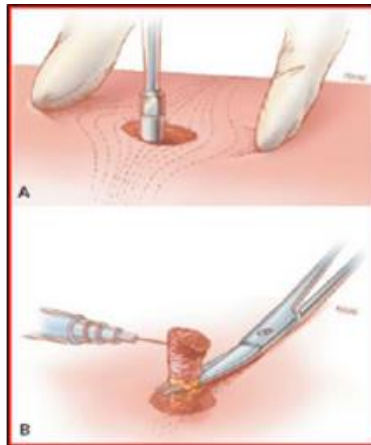
Cystathionine- β -synthase (CBS)

Cystathionine- γ -lyase (CSE)

3-mercaptopyruvate sulfurtransferase (3-MST)

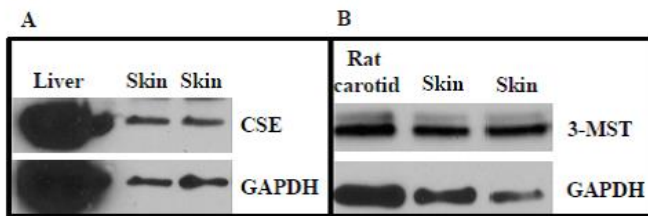


CSE and 3-MST are expressed in the cutaneous circulation of humans.

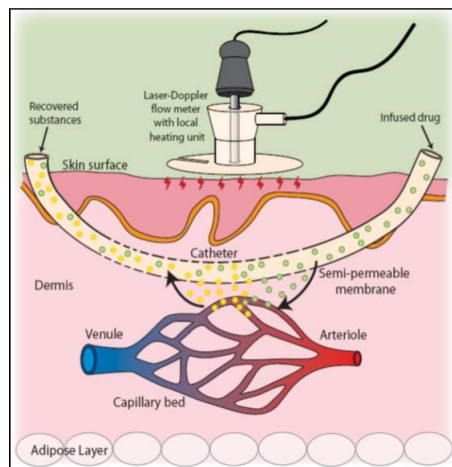




CSE and 3-MST are expressed in the cutaneous circulation of humans.

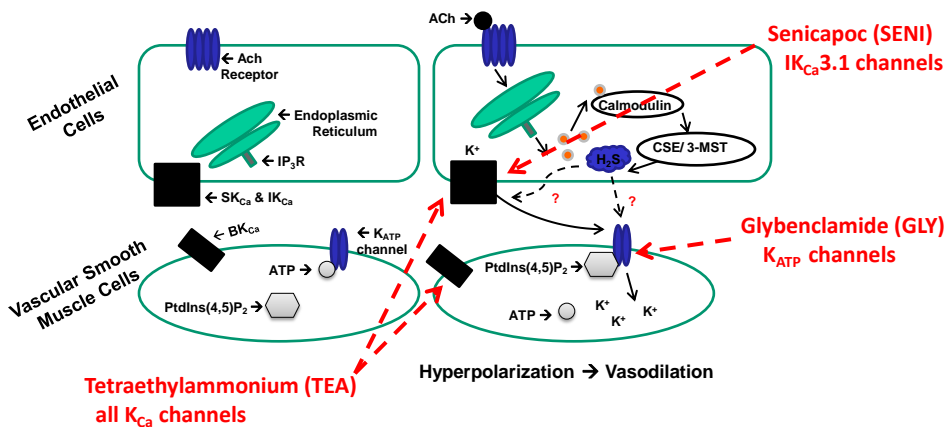
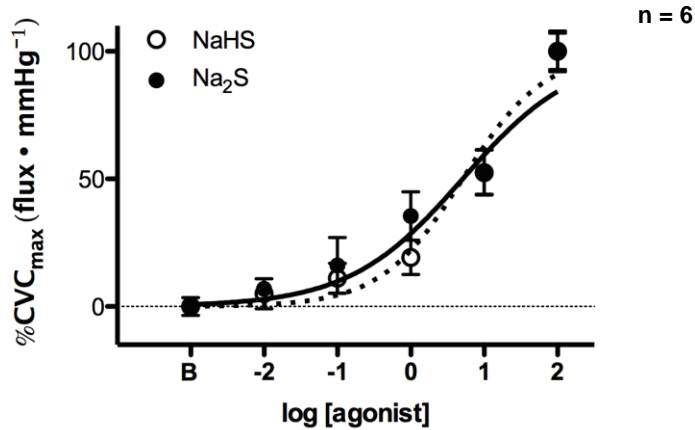


Hydrogen sulfide elicits vasodilation in the cutaneous circulation in a dose-dependent manner.





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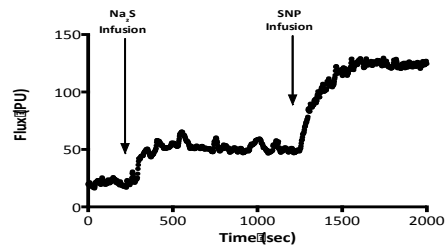


Hypothesis: Exogenous H₂S-induced cutaneous vasodilation is mediated by K_{ATP} channels.

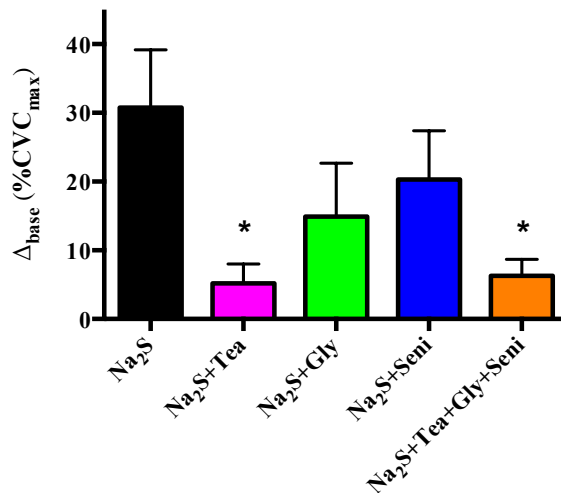


Protocol

	Insert Fibers 20 min	Hyperemia 60-90 min	Baseline 30 min	5 mM Na ₂ S 15 min	Flush Ringers 5 min	SNP + 43° C 5 min
Site 1	Ringers	Control: Ringers		+ Na ₂ S	Ringers	SNP
Site 2	Ringers	K _{Ca} Inhibited		+ Na ₂ S	Ringers	SNP
Site 3	Ringers	IK _{Ca} Inhibited		+ Na ₂ S	Ringers	SNP
Site 4	Ringers	K _{ATP} Inhibited		+ Na ₂ S	Ringers	SNP
Site 5	Ringers	Triple Blockade		+ Na ₂ S	Ringers	SNP

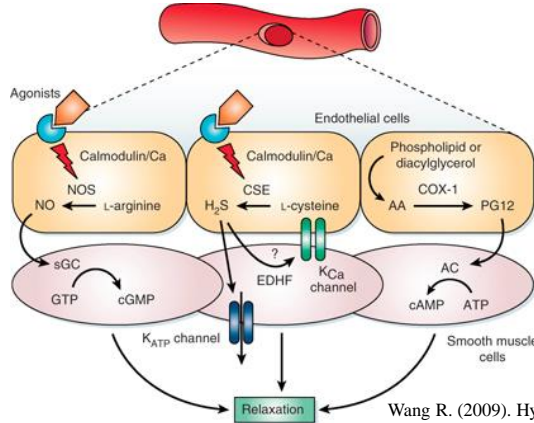


Exogenous H₂S-induced cutaneous vasodilation is mediated, in part, by TEA-sensitive K_{Ca} channels.





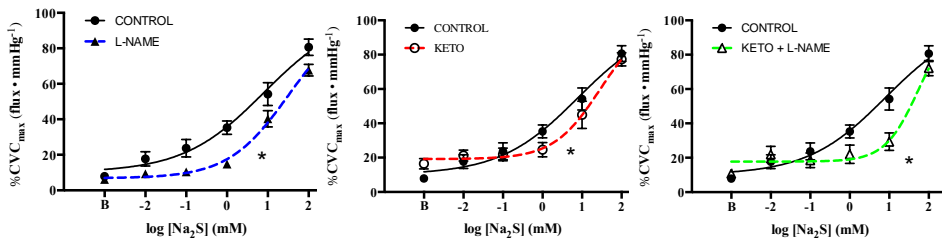
Both NO and by-products of COX contribute, in part, to exogenous hydrogen sulfide-mediated cutaneous vasodilation.



Wang R. (2009). Hydrogen sulfide: a new EDRF. *Kidney international* 76, 700-704



Both NO and by-products of COX contribute, in part, to exogenous hydrogen sulfide-mediated cutaneous vasodilation.





In the cutaneous circulation of humans...

- CSE and 3-MST are expressed
 - Exogenous H₂S donors elicit vasodilation in a dose-dependent manner
 - K_{Ca} channels, at least in part, mediate H₂S induced vasodilation
 - NO and downstream product of COX contribute to exogenous H₂S-mediated vasodilation
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