

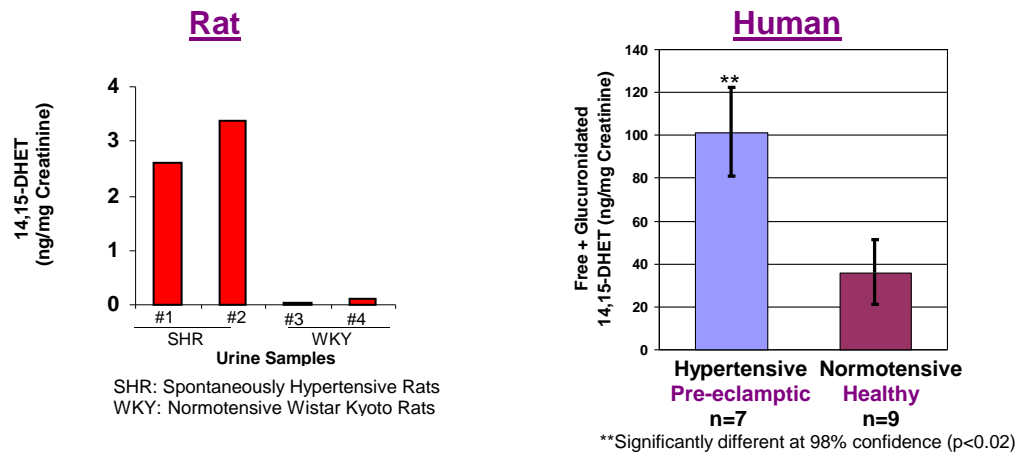


Metro Center for High Technology Bldg.
2727 Second Ave. Suite 4113
Detroit, MI 48201
Phone: (313) 961-1606; Fax: (313)963-7130
Email: info@DetroitRandD.com
Web: www.DetroitRandD.com

Hypertension ELISA (14,15-DHET) kit

Cat # DH 1: ELISA kit for measuring 14,15-DHET in biological samples

The 14,15-DHET is a representative metabolite of soluble epoxide hydrolase (sEH)-mediated metabolism of EETs, generated by arachidonic acid epoxygenase activity of cytochromes P450 (CYPs) 2C and 2J. This competitive ELISA kit with an HRP system has been used to determine 14,15-DHET levels in biological samples (tissue, plasma and urine) and cell culture media. Using the 14,15-DHET ELISA, strong positive correlation has been discovered with 14,15-DHET levels on hypertension and brain injury and stroke, and EET levels on a metastatic phenotype of carcinoma cells and insulin resistance. Next generation hypertension drug discoveries have been carried out at several laboratories. Each kit for a 96-well plate is good for triplicate analyses of up to 24 samples.



(Left) Higher levels of urinary 14,15-DHET in spontaneously hypertensive rats.

(Right) Urinary 14,15-DHET levels of pregnancy-induced hypertensive (preeclamptic) women were significantly different at 98% confidence ($p < 0.02$) from healthy pregnant women

References

1. Liu P, Zhang S, Gao J, Lin Y, Shi G, He W, Touyz RM, Yan L, Huang H. Downregulated serum 14,15-Epoxyeicosatrienoic acid is associated with abdominal aortic calcification in patients with primary aldosteronism. *Hypertension* 71: 592-598, 2018.
2. Li P-S, Tao W, Yang L, Shu Y. Effect of soluble epoxide hydrolase in hyperoxic acute lung injury. *Inflammation* Mar 24. doi: 10.1007/s10753-018-0758-y, 2018.
3. Tu R., Armstrong J., Lee K., Hammock BD, Sapirstein A., Koehler RC. Soluble epoxide hydrolase inhibition decreases reperfusion injury after focal cerebral ischemia. *Sci. Rep* Mar 27;8(1):5279. doi: 10.1038/s41598-018-23504-1, 2018.
4. Chang, L-H., Lin H., Huang S., Chen I., Chu K., Chih, C., Liang Y., Lee Y., Chen Y., Lee Y, Lee I. Blockade of soluble epoxide hydrolase attenuates post-ischemic neuronal hyperexcitation and confers resilience against stroke with TrkB activation. *Sci. Rep.* Jan 8;8(1):118. doi: 10.1038/s41598-017-18558-6, 2018.
5. Akasaka T, Sueta D, Arima Y, Tabata N, Takasio S, Izumiya Y, Yamamoto E, Tsujita K, Kojima S, Kaikita K, Kajiwara A, Morita K, Oniki K, Saruwatari J, Nakagawa K, Hokimoto S. CYP2C19 variants and epoxy eicosatrienoic acids in patients with microvascular angina. *IJC Heart & Vasculature* 15: 15-20 (2017).
6. Santos JM, Joiakim J, Park J-A, Kaplan D, Putt D, Taylor RN, Kim H. Can honokiol be used to ameliorate preeclampsia? Abstract #CV-20, The 16th International Eicosanoid Conference, 2016.

(continued on back page)

7. You WT, Zhou T, Ma ZC, Liang QD, Xiao CR, Tang XL, Tan HL, Zhang BL, Wang YG, Gao Y. Ophiopogonin D maintains Ca(2+) homeostasis in rat **cardiomyocytes** *in vitro* by upregulating CYP2J3/EETs and suppressing ER stress. *Acta Pharmacol Sin.* 2016 Mar;37(3):368-81. doi: 10.1038/aps.2015.146. PMID: 26838069.
8. Kim J, Yoon SP, Toews ML, Imig JD, Hwang SH, Hammock BD, Padanilam BJ. Pharmacological inhibition of soluble epoxide hydrolase prevents **renal** interstitial fibrogenesis in obstructive nephropathy. *Am J Physiol Renal Physiol.* 2015 Jan 15;308(2):F131-9. doi: 10.1152/ajprenal.00531.2014. PMID: 25377915.
9. Mattace Raso G, Pirozzi C, d'Emmanuele di Villa Bianca R, Simeoli R, Santoro, A, Lama A, Di Guida F, Russo R, De Caro C, Sorrentino R, Calignano A, Meli R. Palmitoylethanolamide treatment reduces **blood pressure** in spontaneously hypertensive rats: involvement of cytochrome p450-derived eicosanoids and Renin Angiotensin system. *PLoS One.* 2015 May 7;10(5):e0123602. doi: 10.1371/journal.pone.0123602. eCollection 2015. PMID: 25951330.
10. Dai M, Wu L, He Z, Zhang S, Chen C, Xu X, Wang P, Gruzdev A, Zeldin DC, Wang DW. Epoxyeicosatrienoic Acids Regulate Macrophage Polarization and Prevent LPS-Induced Cardiac Dysfunction. *J Cell Physiol.* 230(9):2108-19. 2015 doi: 10.1002/jcp.24939. PMID: 25626689.
11. Chen G, Xu R, Zhang S, Wang Y, Wang P, Edin ML, Zeldin DC, Wang DW. CYP2J2 overexpression attenuates nonalcoholic fatty liver disease induced by high-fat diet in mice. *Am J Physiol Endocrinol Metab.* 308, E97-E110, 2015.
12. Tain YL, Huang LT, Chan, JYH, Lee CT. Transcriptome Analysis in rat kidneys: importance of genes involved in programmed hypertension *Int J Mol Sci* 16, 4744-4758, 2015.
13. He Z, Zhang X, Chen C, Wen Z, Hoopes SL, Zeldin DC, Wang DW. Cardiomyocyte-specific expression of CYP2J2 prevents development of cardiac remodelling induced by angiotensin II. *Cardiovasc Res* 105, 304-317, 2015.
14. Li R, Xu X, Chen C, Wang Y, Gruzdev A, Zeldin DC, Wang DW. CYP2J2 attenuates **metabolic dysfunction in diabetic mice** by reducing hepatic inflammation via the PPAR γ . *Am J Physiol Endocrinol Metab.* 308, E270-E282, 2015
15. Sato Y, Sato W, Maruyama S, Wilcox CS, Falck JR, Masuda T, Kosugi T, Kojima H, Maeda K, Furuhashi K, Ando M, Imai E, Matsuo S, Kadomatsu K. Midkine **Regulates BP** through Cytochrome P450-Derived Eicosanoids. *J Am Soc Nephrol.* 2015 Aug;26(8):1806-15. doi: 10.1681/ASN.2013121259. PMID: 25377079.
16. Kim J, Imig JD, Yang J, Hammock BD, Padanilam BJ. Inhibition of soluble epoxide hydrolase prevents **renal** interstitial fibrosis and inflammation. *Am J Physiol Renal Physiol* 307, F971-F980, 2014.
17. Ono E, Dutilleul S, Kazani S, Wechsler ME, Yang J, Hammock BD, Douda DN, Tabet Y, Khaddaj-Mallat R, Sirois M, Sirois C, Rizcallah E, Rousseau E, Martin R, Sutherland ER, Castro M, N Jarjour N, Israel E, Levy BD and National Heart, Lung, and Blood Institute's Asthma Clinical Research Network. Lipoxin generation is related to soluble epoxide hydrolase activity in **severe asthma**. *Am J Respir Crit Care Med.* 15, 190, 886-897, 2014.
18. Chen W, Zheng G, Yang S, Ping, W, Fu X, Zhang N, Wang DW, Wang J. CYP2J2 and EETs protect against oxidative stress and apoptosis *in vivo* and *in vitro* following lung ischemia/reperfusion. *Cell Physiol Biochem*, 33, 1663-1680, 2014.
19. Wang X, Ni L, Yang L, Duan Q, Chen C, Edin ML, Zeldin DC, Wang DW. CYP2J2-derived epoxyeicosatrienoic acids suppress endoplasmic reticulum stress in heart failure. *PLoS One.* 2013 Oct 25;8(10):e77034.
20. Shen, Peng, Zhao, Xu A potent soluble epoxide hydrolase inhibitor, *t*-AUCB, modulates **cholesterol balance** and oxidized low density lipoprotein metabolism in adipocytes *in vitro*. *Biol Chem* 395, 443-451 2014.
21. Zhou, Beloartsev, Bloch et al. Deletion of the Murine Cytochrome P450 Cyp2j Locus by Fused BAC-mediated recombination Identifies a Role for Cyp2j in the Pulmonary Vascular Response to Hypoxia. *PLoS Genet.* 9, e1003950, 2013.
22. Eid, Maalouf, Eid et al. 20-HETE and EETs in diabetic nephropathy: A novel mechanistic pathway. *PLOS ONE* 8, e70029, 2013.
23. Xu, Davis, and Hammock et al. A potent soluble epoxide hydrolase inhibitor, *t*-AUCB, acts through PPAR γ to modulate the function of endothelial progenitor cells from patients with **acute myocardial infarction**. *International Journal of Cardiology* 167, 1298-1304, 2013.
24. Wang, Zhang, Du et al. EETs mediate **cardioprotection** of salvianolic acids through MAPK signaling pathway. *Acta Pharmaceutica Sinica B* 3, 25-31, 2013.
25. Ma F, Lin F, Chen C, Cheng J, Zeldin DC, Wang Y, Wang DW. Indapamide lowers blood pressure by increasing production of epoxyeicosatrienoic acids in the kidney. *Mol Pharmacol* 84, 286-295, 2013.