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ATP检测试剂盒

产品编号	产品名称	包装
S0026B	ATP检测试剂盒	200次

产品简介:

- ATP检测试剂盒(ATP Assay Kit)可以用于检测普通溶液、细胞或组织内的ATP(adenosine 5'-triphosphate)水平。
- ATP, 作为最重要的能量分子在细胞的各种生理、病理过程中起着重要作用。ATP水平的改变, 会影响细胞的功能。通常细胞在凋亡、坏死或处于一些毒性状态下, ATP水平会下降, 而高葡萄糖刺激等对于一些细胞可以上调细胞内ATP水平。通常ATP水平的下降表明线粒体的功能受损或下降, 在细胞凋亡时ATP水平的下降通常和线粒体的膜电位下降同时发生。
- 样品制备非常简单。本试剂盒提供了可以用于细胞和组织裂解的ATP检测裂解液, 简单裂解后即可用于ATP检测。无需进行高氯酸或三氯乙酸(TCA)抽提, 或样品裂解后的煮沸等繁琐操作。
- 本试剂盒根据萤火虫萤光素酶(firefly luciferase, 也称荧光素酶)催化萤光素产生萤光时需要ATP提供能量研制而成。当萤火虫萤光素酶和萤光素都过量时, 在一定的浓度范围内荧光的产生和ATP的浓度成正比, 这样就可以高灵敏地检测溶液中的ATP浓度。本试剂盒在样品体积为100微升时可以检测浓度低达5nM的ATP。而常规的细胞或组织裂解液中ATP的浓度仅为0.1-1 μ M, 一些常见细胞的细胞内ATP水平约为10nmol/mg蛋白。并且本试剂盒的检测浓度范围非常大, 检测上限可以高达10 μ M, 并在10nM-10 μ M范围内可以形成良好的标准曲线。
- 使用本试剂盒中的ATP检测裂解液裂解获得的细胞或组织样品, 不仅可以用于ATP检测, 还可用于检测蛋白浓度、进行SDS-PAGE或一些常规的较易溶解蛋白的Western检测。
- 本试剂盒的使用方便快捷, 通常10-20个样品可以在30-60分钟内测定完毕。
- 碧云天的三款ATP检测试剂盒的主要特点和差异如下:

产品编号	S0026	S0026B	S0027
产品名称	ATP检测试剂盒	ATP检测试剂盒	增强型ATP检测试剂盒
检测灵敏度	++++	+++	+++++
特殊样品兼容性	++++	+++++	++++
信号值	++++	+++	+++++
信号稳定性	+++++	++++	+++++
检测下限(ATP)	1nM	5nM	0.1nM
检测上限(ATP)	10 μ M	10 μ M	10 μ M
线性范围(ATP)	1nM-10 μ M	10nM-10 μ M	0.1nM-10 μ M
推荐指数	++++	+++	+++++

- 国际顶级期刊Cell发表的论文中注明使用了本产品(Cell. 2014 Jul 31;158(3):607-19)。
- 一个包装的本试剂盒至少可以检测200个样品。

包装清单:

产品编号	产品名称	包装
S0026B-1	ATP检测试剂	0.2 ml(50 μ l/管, 共4管)
S0026B-2	ATP检测试剂稀释液	20ml
S0026B-3	ATP标准溶液 (0.5mM)	0.1ml
S0026B-4	ATP检测裂解液	100ml
—	说明书	1份

保存条件:

-20°C保存, 半年有效。-70°C保存, 一年有效。ATP检测试剂需避光保存。

注意事项:

- ATP检测试剂中含有萤光素酶, 反复冻融会导致其逐渐失活。尽管经测试ATP检测试剂反复冻融5次对于其检测效果无明显影响, 为取得较好的使用效果, 建议用户使用时的冻融次数不宜超过3次。ATP检测试剂稀释成ATP检测工作液后, 最好一次用完, 不宜冻存后再使用。

- ATP，特别是裂解后样品中的ATP在室温不太稳定，需在4°C或冰上操作。ATP在冰上可以稳定长达6小时。
- 本试剂盒需使用luminometer，即化学发光仪(检测荧光素酶报告基因时所用的仪器)。如果没有luminometer，也可以使用液闪仪。液闪仪的测定效果取决于液闪仪的检测灵敏度和检测精度。
- 使用可检测化学发光的多功能酶标仪时，推荐使用孔和孔之间不透光的96孔白板或黑板。如使用普通的透明96孔板，须特别注意在检测孔之间设置间隔孔，以减少邻近孔之间的相互干扰。对于透明96孔板，一个发光孔可以使上下或左右邻近孔的RLU值升高该孔的10-20%左右，使上下或左右间隔一个孔的邻近孔的RLU值升高该孔的1%-4%左右；对于相同的样品，底部不透光的96孔白板的化学发光读数可以达到透明96孔板的5-10倍左右，达到底部透光96孔白板读数的3倍左右(实测数据会因96孔板、检测仪器和样品等的不同而存在差异)。
- 本试剂盒提供的ATP检测裂解液可以有效裂解并释放常见的培养细胞和组织中的ATP。对于一些特殊的组织或样品，如果发现检测出来的ATP水平显著低于预期水平，可以在裂解样品后并且在离心前，取部分样品煮沸2分钟以充分释放ATP。煮沸后样品中的蛋白会变性，从而会在后续的离心步骤中被沉淀，因此煮沸的样品不能用于蛋白浓度测定、SDS-PAGE和Western检测。可以使用剩余的部分样品进行蛋白浓度测定、SDS-PAGE和Western检测。
- 本产品仅限于专业人员的科学研究用，不得用于临床诊断或治疗，不得用于食品或药品，不得存放于普通住宅内。
- 为了您的安全和健康，请穿实验服并戴一次性手套操作。

使用说明：

1. 样品测定的准备：(注意：样品裂解需在4°C或冰上操作)

对于贴壁细胞：

吸除培养液，按照6孔板每孔加入200微升裂解液的比例(即相当于细胞培养液量2毫升的1/10)加入裂解液，裂解细胞。裂解细胞时为了裂解充分，可以使用移液器进行反复吹打或晃动培养板使裂解液充分接触并裂解细胞。通常细胞在接触裂解液后会立即裂解。裂解后4°C 12000g离心5分钟，取上清，用于后续的测定。

对于悬浮细胞：

用离心管离心沉淀细胞，弃上清，轻轻弹散细胞，按照6孔板每孔的细胞量加入200微升裂解液的比例加入裂解液，裂解细胞。裂解细胞时为了裂解充分可以弹击离心管管底或适当Vortex使裂解液充分接触并裂解细胞。通常细胞在接触裂解液后会立即裂解。裂解后4°C 12000g离心5分钟，取上清，用于后续的测定。

对于组织样品：

按照每20毫克组织加入约100-200微升裂解液的比例加入裂解液，然后用玻璃匀浆器或其它匀浆设备进行匀浆。充分匀浆可以确保组织被完全裂解。裂解后4°C 12000g离心5分钟，取上清，用于后续的测定。

2. 标准曲线测定的准备：

冰浴上溶解待用试剂，把ATP标准溶液用ATP检测裂解液稀释成适当的浓度梯度。具体的浓度需根据样品中ATP的浓度而定。初次检测可以检测0.1、1和10微摩尔/升这几个浓度，在后续的实验中，可以根据样品中ATP的浓度对标准品的浓度进行适当调节。

3. ATP检测工作液的配制：

按照每个样品或标准品需100微升ATP检测工作液的比例配制适当量的ATP检测工作液。把待用试剂在冰浴上溶解。取适量的ATP检测试剂，按照1:100的比例用ATP检测试剂稀释液稀释ATP检测试剂。例如50微升ATP检测试剂可以加入5毫升ATP检测试剂稀释液配制5毫升ATP检测工作液。稀释后的ATP检测试剂即为用于后续实验的ATP检测工作液。ATP检测工作液可在冰浴上暂时保存。

4. ATP浓度的测定：

- 加100微升ATP检测工作液到检测孔或检测管内。室温放置3-5分钟，以使本底性的ATP全部被消耗掉，从而降低本底。可以一次性把10-20个检测孔或检测管分别加上100微升ATP检测工作液，从而节省时间。
- 在检测孔或检测管内加上20微升样品或标准品，迅速用枪(微量移液器)混匀，至少间隔2秒后，用luminometer或液闪仪测定RLU值或CPM。(注：样品的体积可以自行在10-100微升范围内调节。如果样品中的ATP浓度比较低则可以加入100微升样品，如果样品中ATP浓度比较高则可以加入较小体积的样品，同时标准品也需要使用相同的体积。如果样品中ATP的浓度特别高，可以用ATP检测裂解液稀释样品后再测定。本试剂盒在加入100微升标准品时，大致在10nmol/L-10μmol/L的浓度范围内有很好的线性关系。)
- 根据标准曲线计算出样品中ATP的浓度。
- 为了消除样品制备时由于蛋白量的差异而造成的误差，可以用碧云天生产的BCA蛋白浓度测定试剂盒(P0009/P0010/P0010S/P0011/P0012/P0012S)测定样品中的蛋白浓度。然后把ATP的浓度换算成nmol/mg蛋白的形式。

常见问题：

1. Luminometer和荧光分光光度计有何不同？

荧光分光光度计检测的样品本身不能发光，样品需要由特定波长的激发光激发，然后才能产生荧光并被荧光分光光度计检测。Luminometer，即化学发光检测仪，检测的样品本身可以发光，不需要激发光进行激发。也就是说Luminometer是检测化学发光(荧光)的仪器。有些型号的荧光分光光度计也具有luminometer的功能，即也可以检测化学发光。您所使用的荧光分光光度计能否用于化学发光的测定请仔细阅读该仪器的说明书。

2. 可以进行荧光素酶报告基因检测的仪器是否就可以用于本试剂盒的ATP检测？

是。荧光素酶报告基因的检测原理和本ATP检测试剂盒的原理相同，可以用相同的仪器测定，并且可以选择相同的测定参数，例如检测前等待时间为2秒，检测时间为10秒等。

3. 多功能酶标仪是否可以用于本试剂盒的ATP检测？

不一定。如果该多功能酶标仪具有检测化学发光的功能，即具有luminometer的功能，就可以用于本试剂盒的检测，否则就不能了。

相关产品：

产品编号	产品名称	包装
S0026	ATP检测试剂盒	200次
S0026B	ATP检测试剂盒	200次
S0027	增强型ATP检测试剂盒	200次

使用本产品的文献：

1. Zhu CH, Lu FP, He YN, Han ZL, Du LX. Regulation of avilamycin biosynthesis in Streptomyces viridochromogenes: effects of glucose, ammonium ion, and inorganic phosphate. Appl Microbiol Biotechnol. 2007 Jan;73(5):1031-8.

2. Wang YM, Pu P, Le WD. ATP depletion is the major cause of MPP+ induced dopamine neuronal death and worm lethality in alpha-synuclein transgenic C. elegans. Neurosci Bull. 2007 Nov;23(6):329-35.

3. Peng X, Li F, Li S, Zhu Y. Expression of a mitochondrial gene orfH79 from the CMS-HongLian rice inhibits Saccharomyces cerevisiae growth and causes excessive ROS accumulation and decrease in ATP. Biotechnol Lett. 2009 Mar;31(3):409-14.

4. Sheng B, Gong K, Niu Y, Liu L, Yan Y, Lu G, Zhang L, Hu M, Zhao N, Zhang X, Tang P, Gong Y. Inhibition of gamma-secretase activity reduces Abeta production, reduces oxidative stress, increases mitochondrial activity and leads to reduced vulnerability to apoptosis: Implications for the treatment of Alzheimer's disease. Free Radic Biol Med. 2009 May 15;46(10):1362-75.

5. Chen K, Zhang Q, Wang J, Liu F, Mi M, Xu H, Chen F, Zeng K. Taurine protects transformed rat retinal ganglion cells from hypoxia-induced apoptosis by preventing mitochondrial dysfunction. Brain Res. 2009 Jul 7;1279:131-8.

6. Chu L, Wang J, Wang B, Xing XH, Yan S, Sun X, Jurcik B. Changes in biomass activity and characteristics of activated sludge exposed to low ozone dose. Chemosphere. 2009 Sep;77(2):269-72.

7. Sun Q, Hu C, Hu J, Li S, Zhu Y. Quantitative proteomic analysis of CMS-related changes in Honglian CMS rice anther. Protein J. 2009 Oct;28(7-8):341-8.

8. Wang H, Chen XX, Wang LR, Mao YD, Zhou ZM, Sha JH. AF-2364 is a prospective spermiocidal candidate. Asian J Androl. 2010;12(3):322-35.

9. Cao X, Zhang Y, Zou L, Xiao H, Chu Y, Chu X. Persistent oxygen-glucose deprivation induces astrocytic death through two different pathways and calpain-mediated proteolysis of cytoskeletal proteins during astrocytic oncosis. Neurosci Lett. 2010;479(2):118-22.

10. Liu Q, Zhang Y, Lin Z, Shen H, Chen L, Hu L, Jiang H, Shen X. Danshen extract 15,16-dihydroartemisinin I functions as a potential modulator against metabolic syndrome through multi-target pathways. J Steroid Biochem Mol Biol. 2010;120(4-5):155-63.

11. Li SF, Liu HX, Zhang YB, Yan YC, Li YP. The protective effects of alpha-ketoacids against oxidative stress on rat spermatozoa in vitro. Asian J Androl. 2010;12(2):247-56.

12. Yang Q, Gong ZJ, Zhou Y, Yuan JQ, Cheng J, Tian L, Li S, Lin XD, Xu R, Zhu ZR, Mao C. Role of Drosophila alkaline ceramidase (Dacer) in Drosophila development and longevity. Cell Mol Life Sci. 2010 May; 67(9):1477-90.

13. Zhang W, Shi Y, Chen Y, Yu S, Hao J, Luo J, Sha X, Fang X. Enhanced antitumor efficacy by paclitaxel-loaded pluronic P123/F127 mixed micelles against non-small cell lung cancer based on passive tumor targeting and modulation of drug resistance. Eur J Pharm Biopharm. 2010 Aug;75(3):341-53.

14. Gong HS, Meng XC, Wang H. Mode of action of plantaricin MG, a bacteriocin active against Salmonella typhimurium. J Basic Microbiol. 2010 Dec;50 Suppl 1:S37-45.

15. Zhu SS, Ren Y, Zhang M, Cao JQ, Yang Q, Li XY, Bai H, Jiang L, Jiang Q, He ZG, Chen Q. Wld(S) protects against peripheral neuropathy and retinopathy in an experimental model of diabetes in mice. Diabetologia. 2011 Sep;54(9):2440-50.

16. Zhang W, Shi Y, Chen Y, Ye J, Sha X, Fang X. Multifunctional Pluronic P123/F127 mixed polymeric micelles loaded with paclitaxel for the treatment of multidrug resistant tumors. Biomaterials. 2011 Apr; 32(11):2894-906.

17. Cui J, Ou S, He WJ, Du L, Zhao YD, Ruan HZ. Prevention of extracellular ADP-induced ATP accumulation of the cultured rat spinal astrocytes via P2Y(1)-mediated inhibition of AMPK. Neurosci Lett. 2011 Oct 10;503(3):244-9.

18. Cao X, Yang M, Wei RC, Zeng Y, Gu JF, Huang WD, Yang DQ, Li HL, Ding M, Wei N, Zhang KJ, Xu B, Liu XR, Qian QJ, Liu XY. Cancer targeting Gene-Viro-Therapy of liver carcinoma by dual-regulated oncolytic adenovirus armed with TRAIL gene. Gene Ther. 2011 Aug;18(8):765-77.

19. Chang WQ, Wu XZ, Cheng AX, Zhang L, Ji M, Lou HX. Retigeric acid B exerts antifungal effect through enhanced reactive oxygen species and decreased cAMP. Biochim Biophys Acta. 2011 May;1810(5):569-76.

20. Cui Y, Zhao Y, Tian Y, Zhang W, Lü X, Jiang X. The molecular mechanism of action of bactericidal gold nanoparticles on Escherichia coli. Biomaterials. 2012 Mar;33(7):2327-33.

21. Lin LF, Xue XY, Liao MJ, Xiao F, Lv RH, Luo HM. Neurotrophic effects of magnesium fructose 1, 6-diphosphate on cortical neurons. Int J Neurosci. 2012 May;122(5):248-54.

22. Feng Q, Yu AF, Chu LB, Chen HZ, Xing XH. Mechanistic Study of On-site sludge Reduction in a Baffled Bioreactor Consisting of three series of Alternating Aerobic and Anaerobic Compartments. Biochemical Engineering Journal. 2012 Aug;67(15):45-51.

23. Chen Y, Yin Q, Ji X, Zhang S, Chen H, Zheng Y, Sun Y, Qu H, Wang Z, Li Y, Wang X, Zhang K, Zhang L, Shi J. Manganese oxide-based multifunctionalized mesoporous silica nanoparticles for pH-responsive MRI, ultrasonography and circumvention of MDR in cancer cells. Biomaterials. 2012 Oct;33(29):7126-37.

24. Peng Y, Dong D, Jiang C, Yu B, Wang X, Ji Y. Relationship between respiration deficiency and azole resistance in clinical Candida glabrata. FEMS Yeast Res. 2012 Sep;12(6):719-27.

25. Yu SJ, Liu HC, Ling-Ling E, Wang DS, Zhu GX. Proliferation and differentiation of osteoblasts from the mandible of osteoporotic rats. Exp Biol Med (Maywood). 2012 Apr;237(4):395-406.

26. Liu D, Liu S, Jing X, Li X, Li W, Huang Y. Necrosis of cervical carcinoma by dichloroacetate released from electrospun polylactide mats. Biomaterials. 2012 Jun;33(17):4362-9.

27. Li XY, Jing CQ, Zang XY, Yang S, Wang JJ. Toxic cytological alteration and mitochondrial dysfunction in PC12 cells induced by 1-octyl-3-methylimidazolium chloride. Toxicol In Vitro. 2012 Oct; 26(7):1087-92.

28. Yuan Y, Peng L, Gong-Hua H, Lu D, Xia-Li Z, Yu Z, Cai-Gao Z. Chi-square analysis of the reduction of ATP levels in L-02 hepatocytes by hexavalent chromium. Braz J Med Biol Res. 2012 Jun;45(6):482-7.

29. Song GX, Shen YH, Liu YQ, Sun W, Miao LP, Zhou LJ, Liu HL, Yang R, Kong XQ, Cao KJ, Qian LM, Sheng YH. Overexpression of FABP3 promotes apoptosis through inducing mitochondrial impairment in embryonic cancer cells. J Cell Biochem. 2012 Dec;113(12):3701-8.

30. Zhu S, Wang Y, Chen M, Jin J, Qiu Y, Huang M, Huang Z. Protective Effect of Schisandrin B Against Cyclosporine A-Induced Nephrotoxicity In Vitro and In Vivo. Am J Chin Med. 2012;40(3):551-566.

31. Yu Ping Li, Hu Su, Xiao Fang Pi, Yan Chun Gong, Xiang Yuan Xiong, Guang Jie Wu, Zi Ling Li. The Stimulatory Activities of Baicalein and Baicalin Compounds Derived from Scutellaria baicalensis on Insulin Secretion In Vitro. Advanced Materials Research. 2012;554-556:1673.

32. Huang HY, Cai JF, Liu QC, Hu GH, Xia B, Mao JY, Wu DS, Liu JJ, Zhuang ZX. Role of poly(ADP-ribose) glycohydrolase in the regulation of cell fate in response to benzo(a)pyrene. Exp Cell Res. 2012 Mar 10;318(5):682-90.

33. Yuan Y, Ming Z, Gong-Hua H, Lan G, Lu D, Peng L, Feng J, Cai-Gao Z.

- Cr(VI) induces the decrease of ATP level and the increase of apoptosis rate mediated by ROS or VDAC1 in L-02 hepatocytes. *Environ Toxicol Pharmacol*. 2012 Jul 7;34(2):579-587.
34. Yang Y, Li P, Hu GH, Zhou Y, Dai L, Zhong CG. Association between VDAC1 mRNA expression and intracellular ATP levels of cultured L-02 hepatocytes during hexavalent chromium toxicity. *African Journal of Biotechnology*. 2012 Jan 5; 11(2):264-272.
 35. Ji X, Gao Y, Chen L, Zhang Z, Deng Y, Li Y. Nanohybrid systems of non-ionic surfactant inserting liposomes loading paclitaxel for reversal of multidrug resistance. *Int J Pharm*. 2012 Jan 17;422(1-2):390-7.
 36. Liu YQ, Cheng X, Guo LX, Mao C, Chen YJ, Liu HX, Xiao QC, Jiang S, Yao ZJ, Zhou GB. Identification of an annonaceous acetogenin mimetic, AA005, as an AMPK activator and autophagy inducer in colon cancer cells. *PLoS One*. 2012;7(10):e47049.
 37. Yue R, Hu H, Yiu KH, Luo T, Zhou Z, Xu L, Zhang S, Li K, Yu Z. Lycopene protects against hypoxia/reoxygenation-induced apoptosis by preventing mitochondrial dysfunction in primary neonatal mouse cardiomyocytes. *PLoS One*. 2012;7(11):e50778.
 38. Yang Y, Zou Y, Li P, Luo L, Dai L, Zhong C. [Interference of hexavalent chromium on VDAC1 mRNA expression or ATP level and their potential association]. *Wei Sheng Yan Jiu*. 2012 Jul;41(4):546-50.
 39. Peng Y, Yang J, Zhang E, Sun H, Wang Q, Wang T, Su Y, Shi C. Human positive coactivator 4 is a potential novel therapeutic target in non-small cell lung cancer. *Cancer Gene Ther*. 2012 Oct;19(10):690-6.
 40. Lu Y, Lai Q, Zhang C, Zhao H, Xing X. Alteration of energy metabolism in *Enterobacter aerogenes* by external addition of pyrophosphates and overexpression of polyphosphate kinase for enhanced hydrogen production. *Journal of Chemical Technology and Biotechnology*. 2012 Jul; 87(7):996-1003.
 41. Wei Z, Yuan S, Hao J, Fang X. Mechanism of inhibition of P-glycoprotein mediated efflux by Pluronic P123/F127 block copolymers: Relationship between copolymer concentration and inhibitory activity. *Eur J Pharm Biopharm*. 2013 Feb;83(2):266-74.
 42. Ma C, Tang Z, Wang K, Yang X, Tan W. A novel sensitive and selective ligation-based ATP assay using a molecular beacon. *Analyst*. 2013 Apr 22;138(10):3013-7.
 43. Tang Y, Wang F, Jin C, Liang H, Zhong X, Yang Y. Mitochondrial injury induced by nanosized titanium dioxide in A549 cells and rats. *Environ Toxicol Pharmacol*. 2013 Jul;36(1):66-72.
 44. Wang X, Bai H, Zhang X, Liu J, Cao P, Liao N, Zhang W, Wang Z, Hai C. Inhibitory effect of oleanolic acid on hepatocellular carcinoma via ERK-p53-mediated cell cycle arrest and mitochondrial-dependent apoptosis. *Carcinogenesis*. 2013 Jun;34(6):1323-30.
 45. Qiu L, Chen Y, Gao M, Zheng C, Zhao Q. Phagocytic uptake and ROS-mediated cytotoxicity in human hepatic cell line of amphiphilic poly(phosphazene)nanoparticles. *J Biomed Mater Res A*. 2013 Jan; 101(1):285-97.
 46. Wang K, Gao F, Ji Y, Liu Y, Dan Z, Yang P, Zhu Y, Li S. ORFH79 impairs mitochondrial function via interaction with a subunit of electron transport chain complex III in Honglian cytoplasmic male sterile rice. *New Phytol*. 2013 Apr;198(2):408-18.
 47. Wang J, Chen Y, Zhang W, Zheng G, Meng S, Che H, Ke T, Yang J, Chen J, Luo W. Akt Activation Protects Liver Cells from Apoptosis in Rats during Acute Cold Exposure. *Int. J. Biol. Sci*. 2013; 9(5):509-17.
 48. Li N, Zhang CX, Wang XX, Zhang L, Ma X, Zhou J, Ju RJ, Li XY, Zhao WY, Lu WL. Development of targeting lonidamine liposomes that circumvent drug-resistant cancer by acting on mitochondria signaling pathways. *Biomaterials*. 2013 Apr;34(13):3366-80.
 49. Zhou L, Jin J, Song G, Liu H, Liu M, Shi C, Qian L. α -Lipoic acid ameliorates mitochondrial impairment and reverses apoptosis in FABP3-overexpressing embryonic cancer cells. *J Bioenerg Biomembr*. 2013 Oct;45(5):459-66.
 50. Li X, Long D, Ji J, Yang W, Zeng Z, Guo S, Ji Z, Qi G, Chen S. Sample preparation for the metabolomics investigation of poly-gamma-glutamate-producing *Bacillus licheniformis* by GC-MS. *J Microbiol Methods*. 2013 Jul;94(1):61-7.
 51. Dong LY, Jin J, Lu G, Kang XL. Astaxanthin Attenuates the Apoptosis of Retinal Ganglion Cells in db/db Mice by Inhibition of Oxidative Stress. *Mar Drugs*. 2013 Mar 21;11(3):960-74.
 52. Qi M, Fan S, Yao G, Li Z, Zhou H, Tashiro S, Onodera S, Xia M, Ikejima T. Pseudolaric acid B-induced autophagy contributes to senescence via enhancement of ROS generation and mitochondrial dysfunction in murine fibrosarcoma L929 cells. *J Pharmacol Sci*. 2013;121(3):200-11.
 53. Yin Q, Shen J, Zhang Z, Yu H, Chen L, Gu W, Li Y. Multifunctional Nanoparticles Improve Therapeutic Effect for Breast Cancer by Simultaneously Antagonizing Multiple Mechanisms of Multidrug Resistance. *Biomacromolecules*. 2013 Jul 8;14(7):2242-52.
 54. Zhang X, Zuo X, Yang B, Li Z, Xue Y, Zhou Y, Huang J, Zhao X, Zhou J, Yan Y, Zhang H, Guo P, Sun H, Guo L, Zhang Y, Fu XD. MicroRNA directly enhances mitochondrial translation during muscle differentiation. *Cell*. 2014 Jul 31;158(3):607-19.
 55. Cui J, He W, Yi B, Zhao H, Lu K, Ruan H, Ma D. mTOR pathway is involved in ADP-evoked astrocyte activation and ATP release in the spinal dorsal horn in a rat neuropathic pain model. *Neuroscience*. 2014 Sep 5;275:395-403.
 56. Xie X, Xu XM, Li N, Zhang YH, Zhao Y, Ma CY, Dong DL. DMH1 increases glucose metabolism through activating Akt in L6 rat skeletal muscle cells. *PLoS One*. 2014 Sep 23;9(9):e107776.
 57. Luo DJ, Feng Q, Wang ZH, Sun DS, Wang Q, Wang JZ, Liu GP. Knockdown of phosphotyrosyl phosphatase activator induces apoptosis via mitochondrial pathway and the attenuation by simultaneous tau hyperphosphorylation. *J Neurochem*. 2014 Sep;130(6):816-25.
 58. Meng G, Xia M, Xu C, Yuan D, Schnurr M, Wei J. Multifunctional antitumor molecule 5'-triphosphate siRNA combining glutaminase silencing and RIG-I activation. *Int J Cancer*. 2014 Apr 15; 134(8):1958-71.
 59. Shen Y, Tian Y, Shi X, Yang J, Ouyang L, Gao J, Lu J. Exposure to high glutamate concentration activates aerobic glycolysis but inhibits ATP-linked respiration in cultured cortical astrocytes. *Cell Biochem Funct*. 2014 Aug;32(6):530-7.
 60. Sun S, Han Y, Liu J, Fang Y, Tian Y, Zhou J, Ma D, Wu P. Trichostatin A targets the mitochondrial respiratory chain, increasing mitochondrial reactive oxygen species production to trigger apoptosis in human breast cancer cells. *PLoS One*. 2014 Mar 13;9(3):e91610.
 61. Xie Y, Li Q, Yang Q, Yang M, Zhang Z, Zhu L, Yan H, Feng R, Zhang S, Huang C, Liu Z, Wen T. Overexpression of DCF1 inhibits glioma through destruction of mitochondria and activation of apoptosis pathway. *Sci Rep*. 2014 Jan 15;4:3702.
 62. Fang L, Bai C, Chen Y, Dai J, Xiang Y, Ji X, Huang C, Dong Q. Inhibition of ROS production through mitochondria-targeted antioxidant and mitochondrial uncoupling increases post-thaw sperm viability in yellow catfish. *Cryobiology*. 2014 Dec;69(3):386-93.
 63. Su B, Ji YS, Sun XL, Liu XH, Chen ZY. Brain-derived neurotrophic factor (BDNF)-induced mitochondrial motility arrest and presynaptic docking contribute to BDNF-enhanced synaptic transmission. *J Biol Chem*. 2014 Jan 17;289(3):1213-26.
 64. Jia WC, Liu G, Zhang CD, Zhang SP. Formononetin attenuates hydrogen peroxide (H₂O₂)-induced apoptosis and NF- κ B activation in RGC-5 cells. *Eur Rev Med Pharmacol Sci*. 2014;18(15):2191-7.
 65. Zhang H, Sun R, Liu XY, Shi XM, Wang WF, Yu LG, Guo XL. A tetramethylpyrazine piperazine derivative CXC137 prevents cell injury in SH-SY5Y cells and improves memory dysfunction of rats with vascular Dementia. *Neurochem Res*. 2014 Feb;39(2):276-86.
 66. Xu P, Yu H, Zhang Z, Meng Q, Sun H, Chen X, Yin Q, Li Y. Hydrogen-bonded and reduction-responsive micelles loading atorvastatin for therapy of breast cancer metastasis. *Biomaterials*. 2014 Aug; 35(26):7574-87.
 67. Zhang W, Lv J, Zhang Y, Jiang Y, Chu C, Wang S. Epigallocatechin Gallate Promotes the Development of Mouse 2-Cell Embryos In Vitro by Regulating Mitochondrial Activity and Expression of Genes Related to p53 Signalling Pathway. *Basic Clin Pharmacol Toxicol*. 2014 Nov; 115(5):403-10.
 68. Bu H, He X, Zhang Z, Yin Q, Yu H, Li Y. A TPGS-incorporating nanoemulsion of paclitaxel circumvents drug resistance in breast cancer. *Int J Pharm*. 2014 Aug 25;471(1-2):206-13.
 69. Chen G, Dai J, Tan S, Meng S, Liu Z, Li M, Cui Q, Yu M. MTERF1 regulates the oxidative phosphorylation activity and cell proliferation in HeLa cells. *Acta Biochim Biophys Sin (Shanghai)*. 2014 Jun;46(6):512-21.
 70. He Y, Li H, He J, Zhao X. Heavy ion radiation can promote greater motility and enolase protein expression in ram sperm in vitro liquid storage. *Anim Reprod Sci*. 2014 Aug;148(3-4):260-6.
 71. Li Q, Zhang T, Wang J, Zhang Z, Zhai Y, Yang GY, Sun X. Rapamycin attenuates mitochondrial dysfunction via activation of mitophagy in experimental ischemic stroke. *Biochem Biophys Res Commun*. 2014 Feb 7;444(2):182-8.

72. He Z, Liu J, Du L. The unexpected effect of PEGylated gold nanoparticles on the primary function of erythrocytes. *Nanoscale*. 2014 Aug 7;6(15):9017-24.
73. Shen Y, Tian Y, Yang J, Shi X, Ouyang L, Gao J, Lu J. Dual effects of carnosine on energy metabolism of cultured cortical astrocytes under normal and ischemic conditions. *Regul Pept*. 2014 Jun-Aug;192-193:45-52.
74. Xia M, Meng G, Jiang A, Chen A, Dahlhaus M, Gonzalez P, Beltinger C, Wei J. Mitophagy switches cell death from apoptosis to necrosis in NSCLC cells treated with oncolytic measles virus. *Oncotarget*. 2014 Jun 15;5(11):3907-18.
75. Shen Y, Yang J, Li J, Shi X, Ouyang L, Tian Y, Lu J. Carnosine inhibits the proliferation of human gastric cancer SGC-7901 cells through both of the mitochondrial respiration and glycolysis pathways. *PLoS One*. 2014 Aug 12;9(8):e104632.
76. Jiang XR, Yu XY, Fan JH, Guo L, Zhu C, Jiang W, Lu SH. RFT2 is overexpressed in esophageal squamous cell carcinoma and promotes tumorigenesis by sustaining cell proliferation and protecting against cell death. *Cancer Lett*. 2014 Oct 10;353(1):78-86.
77. Mei Z, Wang X, Liu W, Gong J, Gao X, Zhang T, Xie F, Qian L. Mitochondrial adaptations during myocardial hypertrophy induced by abdominal aortic constriction. *Cardiovasc Pathol*. 2014 Sep-Oct; 23(5):283-8.
78. Li J, Ke W, Zhou Q, Wu Y, Luo H, Zhou H, Yang B, Guo Y, Zheng Q, Zhang Y. Tumour necrosis factor- α promotes liver ischaemia-reperfusion injury through the PGC-1 α /Mfn2 pathway. *J Cell Mol Med*. 2014 Sep;18(9):1863-73.
79. Huang W, Tang S, Qiao X, Ma W, Ji S, Wang K, Ye M, Yu S. Isoangustone A induces apoptosis in SW480 human colorectal adenocarcinoma cells by disrupting mitochondrial functions. *Fitoterapia*. 2014 Apr;94:36-47.
80. Li X, Gou X, Long D, Ji Z, Hu L, Xu D, Liu J, Chen S. Physiological and metabolic analysis of nitrate reduction on poly-gamma-glutamic acid synthesis in *Bacillus licheniformis* WX-02. *Arch Microbiol*. 2014 Nov;196(11):791-9.
81. Li X, Xu Z, Jiang Z, Sun L, Ji J, Miao J, Zhang X, Li X, Huang S, Wang T, Zhang L. Hypoglycemic effect of catalpol on high-fat diet/streptozotocin-induced diabetic mice by increasing skeletal muscle mitochondrial biogenesis. *Acta Biochim Biophys Sin (Shanghai)*. 2014 Sep;46(9):738-48.
82. Jiang M, Huang Q, Chen P, Ruan X, Luo Z, Zhao L, Fan W, Peng T, Sun L, Wu H. Monitoring the early biologic response of esophageal carcinoma after irradiation with 18F-FLT: an in-vitro and in-vivo study. *Nucl Med Commun*. 2014 Dec;35(12):1212-9.
83. Liu B, Tang M, Han Z, Li J, Zhang J, Lu P, Song N, Wang Z, Yin C, Zhang W. Co-Incubation of Human Spermatozoa with Anti-VDAC Antibody Reduced Sperm Motility. *Cell Physiol Biochem*. 2014;33(1):142-50.
84. Yan H, Zhang D, Hao S, Li K, Hang CH. Role of Mitochondrial Calcium Uniporter in Early Brain Injury After Experimental Subarachnoid Hemorrhage. *Mol Neurobiol*. 2015 Dec;52(3):1637-47.
85. Du LL, Chai DM, Zhao LN, Li XH, Zhang FC, Zhang HB, Liu LB, Wu K, Liu R, Wang JZ, Zhou XW. AMPK Activation Ameliorates Alzheimer's Disease-Like Pathology and Spatial Memory Impairment in a Streptozotocin-Induced Alzheimer's Disease Model in Rats. *J Alzheimers Dis*. 2015;43(3):775-84.
86. Chen Y, Zhang Z, Yang K, Du J, Xu Y, Liu S. Myeloid zinc-finger 1 (MZF-1) suppresses prostate tumor growth through enforcing ferroportin-conducted iron egress. *Oncogene*. 2015 Jul;34(29):3839-47.
87. Lu L, Han H, Tian Y, Li W, Zhang J, Feng M, Li Y. Aurora kinase A mediates c-Myc's oncogenic effects in hepatocellular carcinoma. *Mol Carcinog*. 2015 Nov;54(11):1467-79.

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