2019年第27期 总180期

茶学研究专题

本期导读

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相关专利

1. 叶绿素姜黄素(CHL)的组成、制备方法和用途
2. 用于治疗单纯疱疹病毒的组合物和方法

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学术文献

1. Isocitrate dehydrogenase 1-mutated cancers are sensitive to the green tea polyphenol epigallocatechin-3-gallate（异柠檬酸脱氢酶1突变的癌症对绿茶多酚表没食子儿茶素-3-没食子酸酯的敏感性）

简介：Background：Mutations in isocitrate dehydrogenase 1 (*IDH1*) occur in various types of cancer and induce metabolic alterations resulting from the neomorphic activity that causes production of *D*-2-hydroxyglutarate (*D*-2-HG) at the expense of α-ketoglutarate (α-KG) and NADPH. To overcome metabolic stress induced by these alterations, *IDH*-mutated (IDH^{mut}) cancers utilize rescue mechanisms comprising pathways in which glutaminase and glutamate dehydrogenase (GLUD) are involved. We hypothesized that inhibition of glutamate processing with the pleiotropic GLUD-inhibitor epigallocatechin-3-gallate (EGCG) would not only hamper *D*-2-HG production, but also decrease NAD(P)H and α-KG synthesis in IDH^{mut} cancers, resulting in increased metabolic stress and increased sensitivity to radiotherapy.

Methods：We performed ^{13}C-tracing studies to show that HCT116 colorectal cancer cells with an $IDH1^{R132H}$ knock-in allele depend more on glutaminolysis than on glycolysis for the production of *D*-2-HG. We treated HCT116 cells, HCT116-$IDH1^{R132H}$ cells, and HT1080 cells (carrying an $IDH1^{R132C}$ mutation) with EGCG and evaluated *D*-2-HG production, cell proliferation rates, and sensitivity to radiotherapy.

Results： Significant amounts of ^{13}C from glutamate accumulate in *D*-2-HG in HCT116-$IDH1^{wt/R132H}$ but not in HCT116-$IDH1^{wt/wt}$. Preventing glutamate processing in HCT116-$IDH1^{wt/R132H}$ cells with EGCG resulted in reduction of *D*-2-HG production. In addition, EGCG treatment decreased proliferation rates of $IDH1^{mut}$ cells and at high doses sensitized cancer cells to ionizing radiation. Effects of EGCG in *IDH*-mutated cell lines were diminished by treatment with the $IDH1^{mut}$ inhibitor AGI-5198.

Conclusions：This work shows that glutamate can be directly processed into *D*-2-HG and that reduction of glutamatolysis may be an effective and promising new treatment option for IDH^{mut} cancers.

来源：Cancer & Metabolism 期刊

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全文链接:http://agri.ckcest.cn/file1/M00/06/87/Csgk0F0Yi7eAfNlTACt18AJUXog556.pdf

2. Pharmacokinetics and Blood–Brain Barrier Penetration of (+)-Catechin and (−)-Epicatechin in Rats by Microdialysis Sampling Coupled to High-Performance Liquid Chromatography with Chemiluminescence Detection（利用微量透析取样联合高效液相色谱–化学发光检测法测定大鼠中(+)-儿茶素和(-)-表儿茶素的药代动力学和血脑屏障渗透性）

简介：(+)-Catechin (C) and (−)-epicatechin (EC), as the basic monomer units of flavanols, can be widely found in natural products or medicinal herbs. Recent pharmacological studies have revealed that C and EC exhibit good neuroprotective effects. However, there is little information

about pharmacokinetic profiles in the brain and in vivo BBB penetration of C and EC. In this paper, an ultrasensitive method using high-performance liquid chromatography (HPLC) with chemiluminescence (CL) detection was developed for the analysis of microdialysis samples. The detection limits for C and EC in Ringer's solution were 1.0 and 1.2 ng/mL, respectively. The intraday and interday accuracies for C and EC in Ringer's solution ranged from −3.0 to 4.4%, and the intraday and interday precisions were below 5.2%. The mean in vivo recoveries of C and EC in microdialysis probes were 33.7% and 26.5% in blood while 38.3% and 29.1% in brain. Pharmacokinetic parameters were estimated using the statistical moment method after iv administration (C and EC, 20 mg/kg of body weight) in rats. Brain-to-blood (AUCbrain/AUCblood) distribution ratios were 0.0726±0.0376 for C and 0.1065 ±0.0531 for EC, indicating that C and EC could pass through the BBB, which is further evidence of their neuroprotective effects.

来源：Journal of Agricultural and Food Chemistry 期刊

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全文链接:http://agri.ckcest.cn/file1/M00/06/87/Csgk0F0Yhb-AFWyUAAfJtQDE8fo620.pdf

3. Evolution of jasmonate and salicylate signal crosstalk（茉莉酸和水杨酸信号串扰的演化）

简介：The evolution of land plants approximately 470 million years ago created a new adaptive zone for natural enemies (attackers) of plants. In response to attack, plants evolved highly effective, inducible defense systems. Two plant hormones modulating inducible defenses are salicylic acid (SA) and jasmonic acid (JA). Current thinking is that SA induces resistance against biotrophic pathogens and some phloem feeding insects and JA induces resistance against necrotrophic pathogens, some phloem feeding insects and chewing herbivores. Signaling crosstalk between SA and JA commonly manifests as a reciprocal antagonism and may be adaptive, but this remains speculative. We examine evidence for and against adaptive explanations for antagonistic crosstalk, trace its phylogenetic origins and provide a hypothesis-testing framework for future research on the adaptive significance of SAJA crosstalk.

来源：Trends in Plant Science 期刊

发布日期:2012-04-10

全文链接:http://agri.ckcest.cn/file1/M00/06/87/Csgk0F0Yh3KAaIpgAAaRDoNNIAo874.pdf

4. The chemistry and biotransformation of tea constituents（茶叶成分的化学和生物转化）

简介：Tea (*Camellia sinensis*, Theaceae) is one of the most widely consumed beverages in the world. The three major types of tea, green tea, oolong tea, and black tea, differ in terms of the manufacture and chemical composition. There are numerous studies in humans, animal models, and cell lines to suggest potential health benefits from the consumption of tea, including prevention of cancer and heart diseases. Many of the health benefits have been attributed to the polyphenolic constituents in tea. Catechins and their dimers (theaflavins) and polymers (thearubigins) have been identified as the major components in tea. Methylation,

glucuronidation, sulfation, and ring-fission metabolism represent the major metabolic pathways for tea catechins. The present review summarizes the data concerning the chemistry and biotransformation of tea constituents.

来源： Pharmacological Research 期刊

发布日期: 2011-03-01

全文链接: http://agri.ckcest.cn/file1/M00/06/86/Csgk0F0YJROATTJdAA7flDzF4D4838.pdf

相关专利

1. Curcuminoid chlorophyllin (CHL) compositions and methods of preparation and use（叶绿素姜黄素(CHL)的组成、制备方法和用途）

简介： Provided herein are solid form water soluble curcuminoid compositions, including a curcuminoid; and a solubilization matrix, wherein the solubilization matrix is selected from one or more of the following: (i) chlorophyllin (CHL); (ii) green tea extract; (iii) epigallocatechin gallate (EGCG); (iv) Rutin; and (v) an aromatic amino acid. Alternatively, the solubilization matrix may include methylsulfonylmethane (MSM). Also provided herein are methods for producing curcuminoid compositions.

来源： 新西兰专利

发布日期: 2019-03-29

全文链接: http://agri.ckcest.cn/file1/M00/06/87/Csgk0F0cGqaAXWZNAAuHrZJ1nhM533.pdf

2. Compositions and methods for treating herpes simplex virus（用于治疗单纯疱疹病毒的组合物和方法）

简介： 该发明提供了绿茶多酚的组合物及其治疗单纯疱疹病毒(HSV)的方法。代表性的绿茶多酚包括但不限于（-）-表没食子儿茶素-3-没食子酸酯以及具有一个或多个酯连接的脂肪酸的绿茶多酚。

来源： 美国专利

发布日期: 2016-09-20

全文链接: http://agri.ckcest.cn/file1/M00/06/87/Csgk0F0cFJeAIDkqAD59TSU5750673.pdf