茶学研究专题

本期导读

➤ 学术文献

1. 茶叶中生物活性氨基酸L-茶氨酸的神经保护特性及其在帕金森病治疗中的潜在作用

2. 危险信号 – 生命树中受损的自我识别

3. 了解绿茶多酚在衰老和神经退行性疾病中的广谱神经保护作用

4. 草食动物、维管通路和系统诱导：事实和假象

➤ 相关专利

1. 从绿茶提取物或绿茶粉末中分离没食子表儿茶素(EGCG & ECG)的方法

2. 包含绿茶提取物和铁的液体营养组合物

1．Neuroprotective attributes of L-theanine, a bioactive amino acid of tea, and its potential role in Parkinson's disease therapeutics（茶叶中生物活性氨基酸L-茶氨酸的神经保护特性及其在帕金森病治疗中的潜在作用）

简介：Meta-analyses of tea consumption and reduced risk of Parkinson's disease have thrown light in the pathway of exploring beneficial properties of tea components. On the basis of dry mass, a typical black or green tea beverage contains approximately 6% of free amino acids, which impart high quality, taste and distinctive aroma to the tea infusion. L-theanine (chemically known as γ-glutamylethylamide) is a non-proteinogenic amino acid of tea that takes part in the biosynthesis of its polyphenols. Recently discovered neuroprotective effects of L-theanine can be attributed to its structural analogy with glutamate, the principal excitatory neurotransmitter in brain. This unique amino acid also bears a potential to ameliorate the pathophysiological changes associated with Parkinson's disease as it displays antioxidant and anti-inflammatory properties, improves motor behavioral abnormalities, increases dopamine availability and may cause a favorable downshift in neurodegeneration due to glutamate excitotoxicity. To gain an explicit understanding of the role of L-theanine, this review article is the first one to focus on its mechanism of neuromodulatory action and to critically evaluate the possibilities of employing this bioactive amide in the forage of anti-Parkinsonian medication. We also hypothesize the idea of L-theanine being a potent natural agent against L-DOPA induced dyskinesia, since long-term reliance on dopamine replacement therapy is linked with elevation in glutamate receptor activity.

来源：Neurochemistry International 期刊

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2．Danger signals – damaged-self recognition across the tree of life（危险信号 – 生命树中受损的自我识别）

简介：Multicellular organisms suffer injury and serve as hosts for microorganisms. Therefore, they require mechanisms to detect injury and to distinguish the self from the non-self and the harmless non-self (microbial mutualists and commensals) from the detrimental non-self (pathogens). Danger signals are "damage-associated molecular patterns" (DAMPs) that are released from the disrupted host tissue or exposed on stressed cells. Seemingly ubiquitous DAMPs are extracellular ATP or extracellular DNA, fragmented cell walls or extracellular matrices, and many other types of delocalized molecules and fragments of macromolecules that are released when pre-existing precursors come into contact with enzymes from which they are separated in the intact cell. Any kind of these DAMPs enable damaged-self recognition, inform the host on tissue disruption, initiate processes aimed at restoring homeostasis, such as sealing the wound, and prepare the adjacent tissues for the perception of invaders. In mammals, antigen-processing and -presenting cells such as dendritic cells mature to immunostimulatory

cells after the perception of DAMPs, prime naïve T-cells and elicit a specific adaptive T-/B-cell immune response. We discuss molecules that serve as DAMPs in multiple organisms and their perception by pattern recognition receptors (PRRs). Ca^{2+}-fluxes, membrane depolarization, the liberation of reactive oxygen species and mitogen-activated protein kinase (MAPK) signaling cascades are the ubiquitous molecular mechanisms that act downstream of the PRRs in organisms across the tree of life. Damaged-self recognition contains both homologous and analogous elements and is likely to have evolved in all eukaryotic kingdoms, because all organisms found the same solutions for the same problem: damage must be recognized without depending on enemy-derived molecules and responses to the non-self must be directed specifically against detrimental invaders.

来源：Plant Microbe Interactions 期刊

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3．Understanding the Broad-Spectrum Neuroprotective Action Profile of Green Tea Polyphenols in Aging and Neurodegenerative Diseases（了解绿茶多酚在衰老和神经退行性疾病中的广谱神经保护作用）

简介：During the last century, the world population has shown a staggering increase in its proportion of elderly members and thus, neurodegenerative diseases like Alzheimer's and Parkinson's diseases (AD and PD, respectively) are becoming an increasing burden. Brain aging and neurodegenerative diseases of the elderly are characterized by oxidative damage, dysregulation of redox metals homeostasis and inflammation, supporting a therapeutic use of antioxidants. Natural plant polyphenols (flavonoids and non-flavonoids) are the most abundant antioxidants in the diet and as such, are ideal nutraceuticals for neutralizing stress-induced free radicals and inflammation. Human epidemiological and new animal data suggest that green and black tea drinking (enriched in a class of flavonoids named catechins) may help protecting the aging brain and reduce the incidence of dementia, AD, and PD. Mechanistic studies on the neuroprotective/neuroregenerative effects of green tea catechins revealed that they act not only as antioxidants metal chelators, but also as modulators of intracellular neuronal signaling and metabolism, cell survival/death genes, and mitochondrial function. Thus, these dietary compounds are receiving significant attention as therapeutic multifunctional cytoprotective agents that simultaneously manipulate various brain targets. The scope of this review is to assess and put into perspective salient features of the beneficial brain action of natural, non-toxic green tea catechins in aging-impaired cognition and neurodegenerative diseases and to discuss a scenario concerning their potential, in drug combination, to target distinct pathologies, in the quest for a disease modifying therapy.

来源：Journal of Alzheimer's Disease 期刊

发布日期：2011-07-01

全文链接：http://agri.ckcest.cn/file1/M00/06/87/Csgk0F0YjgaAcUHqAIR5FUSrCYM914.pdf

4．Herbivores, Vascular Pathways, and Systemic Induction: Facts and Artifacts（草食动物、维管通路和系统诱导：事实和假象）

简介：Over the past 10 years there has been tremendous growth in our understanding of molecular, chemical, and morphological induction of traits involved in the resistance of plants to herbivores. Although it is well established that the patterns of induction can be constrained by a plant's vascular architecture, studies often fail to account for these constraints. Failure to do so has the potential to severely underestimate both the patterns and extent of induction. Here I review (1) the evidence for vascular control of induced responses, (2) how interspecific variation in phyllotaxy influences spatial patterning of induction, (3) the factors, phloem transport and volatile production, that may break down vascular constraints and lead to more widespread induction, and (4) the experimental approaches that could be compromised when vascular architecture is not considered. I show that vascular constraints in systemic induction are commonplace, but vary among species. I suggest that when induction is more widespread than expected from patterns of phyllotaxy, differences in vascular connectivity and volatile production may be responsible. I argue that advances in the mechanisms of systemic induction, cross-talk between different signal transduction pathways, specificity of induction, costs and benefits of systemic induction, and the effects of induced changes on herbivores and their natural enemies require that experiments be designed to examine and/or control for vascular constraints in systemic induction.

来源：Journal of Chemical Ecology 期刊

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全文链接：http://agri.ckcest.cn/file1/M00/06/87/Csgk0F0YpXOALKIuAAKiU-ST7y8030.pdf

➤ 相关专利

1．Process for the separation of gallated epicatechins (EGCG & ECG) from green tea extract or green tea dust（从绿茶提取物或绿茶粉末中分离没食子表儿茶素（EGCG & ECG）的方法）

简介：The present invention relates to an improved process for the separation of gallated epicatechins (EGCG & ECG) from green tea extract or green tea dust. The present invention specifically relates to an improved process for the separation of gallated epicatechins (EGCG & ECG) from green tea extract or green tea dust by forming hydrated gallated epicatechins (EGCG & ECG)-isonicotinic acid complex using isonicotinic acid as acid, organic solvents for liberating gallated epicatechins. The present invention more specifically relates to the process for the separation of gallated epicatechins (EGCG & ECG) from green tea extract or green teadust, wherein processes comprises steps of dissolving, concentrating by centrifugation, adding, precipitating, filtering, slurrying, removing supernatant liquid, washing, extracting and freeze drying. The present invention also relates to hydrated gallated epicatechins (EGCG & ECG)-isonicotinic acid complex.

来源：世界知识产权组织

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2．Liquid nutritional compositions including green tea extract and iron(包含绿茶提取物和铁的液体营养组合物)

简介：灭菌过的液体营养组合物为灰白色，pH为约6至7.5，包含蛋白质来源、脂肪来源、碳水化合物来源，并包含表没食子儿茶素没食子酸酯（EGCG）的绿茶提取物和不溶性铁源（包含正磷酸铁和焦磷酸铁中的至少一种）。所述液体营养成分包括，每237毫升含有约50至500毫克绿茶提取物，大约6至60毫克正磷酸盐铁和/或焦磷酸盐铁，并且Hunter L值不小于60。

来源：世界知识产权组织

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