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茶学研究专题

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学术文献

1. Detection methods, migration patterns, and health effects of pesticide residues in tea (茶叶中农药残留检测方法、迁移模式及对健康的影响)

简介: Due to its rich health benefits and unique cultural charm, tea drinking is increasingly popular with the public in modern society. The safety of tea is the top priority that affects the development of tea industry and the health of consumers. During the process of tea growth, pesticides are used to prevent the invasion of pests and diseases with maintaining high quality and stable yield. Because hot water brewing is the traditional way of tea consumption, water is the main carrier for pesticide residues in tea into human body accompanied by potential risks. In this review, pesticides used in tea gardens are divided into two categories according to their solubility, among which water-soluble pesticides pose a greater risk. We summarized the methods of the sample pretreatment and detection of pesticide residues and expounded the migration patterns and influencing factors of tea throughout the process of growth, processing, storage, and consumption. Moreover, the toxicity and safety of pesticide residues and diseases caused by human intake were analyzed. The risk assessment and traceability of pesticide residues in tea were carried out, and potential eco-friendly improvement strategies were proposed. The review is expected to provide a valuable reference for reducing risks of pesticide residues in tea and ensuring the safety of tea consumption.

来源: Comprehensive Reviews in Food Science and Food Safety 期刊

发布日期: 2023-05-11

全文链接: <http://agri.nais.net.cn/file1/M00/03/62/Csgk0UEagF2AZkzfABzyCoZao9c298.pdf>

2. Dissipation and Dietary Risk Assessment of Thiacloprid and Tolfenpyrad in Tea in China (中国茶叶中噻虫啉和唑虫酰胺的消散及膳食风险评估)

简介: Pesticides are widely used to maintain tea yields. For achieving satisfactory effects on pests, multiple pesticides in a low application dose have been the trend at present. In this study, we investigated the dissipation and dietary risk assessment of thiacloprid and tolfenpyrad. A method for the determination of thiacloprid and tolfenpyrad was developed. The recoveries ranged from 73% to 105% with standard deviations between 0.7% and 8.3%. Limits of quantification were 0.01 mg/kg for both pesticides. Field trials were conducted in China in 2021. The half-lives were in ranges of 3.22 to 8.45 days for thiacloprid and 2.91 to 10.50 days for tolfenpyrad. The terminal residues were in the range of 0.042.55 mg/kg for thiacloprid and <0.014.00 mg/kg for tolfenpyrad, respectively. Finally, a dietary risk assessment was conducted representing the acceptable risk of the two pesticides, which of ratios were all less than 100%. The safe pre-harvest interval of 14 days was suggested. This study can serve as a guide for the rational application of thiacloprid and tolfenpyrad in tea, which also ensures the safety of human health.

来源: Agronomy-Basel 期刊

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全文链接: <http://agri.nais.net.cn/file1/M00/03/62/Csgk0UEav9aAdSHTAA9NqyLDUaQ326.pdf>

3. Residue analysis, dissipation patterns of chlorfenapyr, diafenthiuron and their corresponding metabolites in tea trees, and dietary intake risk assessment (溴虫腈、丁醚脲及其代谢产物在茶树中的残留分析、耗散规律及膳食摄入风险评估)

简介: **BACKGROUND**

Recently, chlorfenapyr and diafenthiuron have been widely used to prevent and control diseases and pests in tea production. However, rare studies have investigated the dissipation patterns of chlorfenapyr, diafenthiuron and their metabolites simultaneously in tea matrices. Here, we established an analytical method to investigate the degradation patterns of five target compounds in tea shoots and made tea samples. Moreover, the dietary intake risk assessment of chlorfenapyr–diafenthiuron mixture among Chinese populations was evaluated based on the supervised field experiment.

RESULTS

The mean recoveries of the primary analytes at five spiking levels were between 95.6% and 112.6% in tea shoots and made tea, respectively, and the values of RSD (relative standard deviation) were lower than 9.7% for all the target analytes. The field trial results showed that the half-lives of chlorfenapyr and diafenthiuron based on the residue definition were 10.0–12.4 days and 4.3–5.9 days, respectively, in tea shoots. For the dietary intake risk assessment, the risk quotient (RQ) values in made tea ranged from 30.4% to 73.9% at the pre-harvest interval of 14 days, which were significantly less than 100%.

CONCLUSION

The accuracy and precision of the developed method were satisfied by the measurement requirements according to the validation results. The dynamic dissipation experiments suggested that diafenthiuron was much easier to dissipate than chlorfenapyr. Moreover, the existence of tralopyril made the half-life of chlorfenapyr significantly increase, indicating that practical application of chlorfenapyr should take careful consideration of its metabolite. Finally, the potential chronic dietary risks of the chlorfenapyr–diafenthiuron mixture to human communities were within the acceptable range.

来源: Journal of the Science of Food and Agriculture 期刊

发布日期: 2022-04-14

全文链接: <http://agri.nais.net.cn/file1/M00/10/34/Csgk0EEahNyAcQB9ABeNTmJZr2Q462.pdf>

4. Concentrations, leachability, and health risks of mercury in green tea from major production areas in China (中国主要产区绿茶中汞的浓度、浸出性和健康风险)

简介: Green tea has many health benefits and is the most consumed type in China. However, the heavy metals and contaminants in tea can also pose a great risk to human health. In this study, mercury (Hg) concentration in green tea collected from 11 provinces in China was examined. The leaching characteristics of Hg during brewing and the associated exposure to drinkers were

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also evaluated. Results indicated a low potential of Hg accumulation in green tea. The Hg content of green tea from Wanshan District, Guizhou Province—which has the largest Hg mine in China and is severely contaminated by Hg—could be limited by controlling the harvest time of tea leaves. The average Hg content of green tea from 43 tea production sites in China was only $6.3 \pm 6.4 \mu\text{g/kg}$ dry weight. The brewing experiments of green tea showed that the leaching ratio of Hg was $22.61 \pm 7.58\%$ for 40 min of a single brew, and increased to $32.83 \pm 12.37\%$ after four rounds (3 min/ round) of brewing. The leaching of Hg from tea leaves was significantly affected by leaching time, temperature, and solid-liquid ratio but not by water hardness. The risk of Hg exposure from green tea intake was found to be very low, with an average hazard quotient (HQ) value of only $1.82 \pm 1.85\%$ for a single brew in 40 min and $2.64 \pm 2.68\%$ after four rounds of brewing. However, in some highly contaminated areas, with HQ values as high as $43.12 \pm 2.41\%$, green tea intake may still pose a high risk of Hg exposure, and this risk should not be ignored.

来源: Ecotoxicology and Environmental Safety 期刊

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全文链接:<http://agri.nais.net.cn/file1/M00/03/62/Csgk0UEajfuAB-hqABrtyF-W4m0262.pdf>

➤ 相关专利

1. Composition and method to control tea mosquito bug by pheromone trap (一种利用信息素诱捕器防治茶角盲蝽的组合物及方法)

简介: The invention provides a composition and method for trapping and controlling Tea mosquito bug, (*Helopeltis theivora*), which comprises the steps of: A mixture of hexyn-1-ol, 2-pentyn-1-ol and 1, 5 hexadiyne which acts as botanical pheromone trapping agent preferably in the ratio of 1:3:5 to 1:5:7 volume / volume . This can be employed as a powerful attractant for instance in traps to detect or control infestations of the Tea mosquito bug, (*Helopeltis theivora*) or to confuse the male insects of this species in its search for the female, thereby preventing or diminishing its reproduction., while placing the trapper into a tea garden to lure these pests. Trapping Tea mosquito bug, (*Helopeltis theivora*) with this composition will reduce fertilization process in the female ova so that the population density in next year is reduced. The method provided by the invention is free of pollution, adapts to the production of current organic tea and non-polluted tea, and has the advantages of high control efficiency, stable performance, reduction of use frequency and reduction of use dosage of chemical pesticides and low cost. Dated this day of May 2018

来源: 印度专利

发布日期:2019-12-06

全文链接:http://agri.nais.net.cn/file1/M00/10/34/Csgk0EEawJOAFVu5AAo2C1jEf_I649.pdf

➤ 科技图书

1. Pesticide Toxicology (农药毒理学)

简介: 本书详细地探讨了各种样品中农药的鉴定和定量的实际程序。各章指导读者了解从

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生物和非生物样本中提取农药的方法和协议、给药技术和结构鉴定中的陷阱，并概述这些农药在人类中造成的问题。作为药理学和毒理学系列方法的一部分，章节包括各自主题的介绍，试剂和材料列表，操作步骤指南和可重复的实验室协议，以及解决常见问题和避免已知陷阱的宝贵提示。《农药毒理学》具有权威性和实用性，是学术界、分析师、毒理学家、环保主义者、卫生和行业专业人士的理想参考工具，旨在了解相关风险，限制这些物质的使用，并将其对人类健康和环境的潜在危害降至最低。

来源：SpringerLink 网站

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