

Analysis of Tea pesticide residue standards and testing methods

Jing Chen^{1, a}, Jia-ming Rui^{2, b} and Xiao-rong Liu^{1, c}

¹School of Beijing, Beijing Wuzi University, Beijing 101149, China;

² School of Beijing, Beijing Wuzi University, Beijing 101149, China.

^a13811480429@126.com, ^b13811480429@126.com, ^c15046494907@163.com

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Abstract. Tea has always been China's traditional agricultural crops, and is one of a large number of agricultural exports. However, in recent years, China's tea exports encountered the biggest problem is pesticide residues, developed countries or regions to limit pesticide residues in tea standards have hindered the development of China's tea exports. Aiming Situation to Analysis and Research of China's tea exports to China tea pesticide residue limits with the European Union, Japan, the United States and other developed countries or regions as well as the United Nations Food Codex Committee on Pesticide Residues (CODEX) differences tea pesticide residue limits exist, this article proposed more specific response. At the same time, through the analysis of pesticide residues in tea different methods and control measures, to improve the tea pesticide residue standards, source control, and improve tea security, we made recommendations to make China's tea product quality and international standards as soon as possible.

Tea pesticide residue limit standard analytical research and response measures

China is not only the country where people cultivate tea, process tea and export tea, but also is the first country to start growing tea. The growing of tea export trade has accelerated the production of tea quality and safety standards. In order to achieve purposes to control the quality and safety of tea, tea quality and safety indicators involved in the relevant standards are being tested, and the resulting detection limits and standards to make data comparison, the amount of pesticide residues in tea come whether there is or prohibited pesticides is exceeded.

The different principles of pesticide residue standards lead to the existence of some differences pesticide residue standards at home and abroad. Because of this difference, domestic and foreign generated considerable controversy about tea is excessive pesticide residues, but also it formed a resistance for China's tea exports. Lipton is the world's leading brand of tea why its production of quality products should meet the requirements.

Facts have proved that "double standards" of pesticide residues in tea has seriously hindered the development of China's tea exports, therefore, to enhance the importance of tea in standards and control methods pesticide residues and to be in line with international standards as much as possible are of great significance to enhance the quality of tea products. This can not only improve the status and influence of Chinese tea in the international community, but it is a guarantee of consumer safety.

Foreign tea pesticide residue standards. There are more than 50 tea-producing countries and more than 130 tea-consuming countries all over the world. The international tea market is given priority to with black tea trade, accounting for more than 88% of total international tea trade. Therefore, foreign tea product quality standards are mainly black tea standard, namely tea mainly to international standards ISO 3720-1986 "tea - Definition and basic requirements" as the representative.

Pesticide residue standards of domestic tea. Our tea have wide variety and tea products are varied. Many departments have developed and released tea standards. China's current standards related to tea include international standards, tea export standards and domestic goods tea standards this 3 level. International standards have product standards and testing methods standard categories, such as ISO 6079-1990 "the solid instant tea specifications", ISO 7516- 1984 "solid instant tea sampling." The standard of exports tea is the foreign trade industry standards, namely commodity-importing countries

to follow tea standard. The standard of commodity tea in China's domestic is more complicated. There are four levels: national standards, industry standards, local standards and enterprise standards.

This series of changes in standards, indicating that China's tea pesticide residue standards are working gradually into line with international standards.

Compare for pesticide residues. The following chart lists some comparisons of the United States, Japan, EU and China Standard:

Table 1

CAC standard tea pesticide maximum residue limits		
Chinese name	English name	Limit (mg/kg)
百草枯Paraquat 0.2	Paraquat	0.2
甲硫咪唑	Methidathion	0.5
噻虫胺	Clothianidin	0.7
甲氰菊酯	Fenpropathrin	2
陶斯松	Chlorpyrifos	2
溴氰菊酯	Deltamethrin	5
克螨特	Propargite	5
硫丹	Endosulfan	10
乙螨唑	Etoxazole	15
氯氰菊酯	Cypermethrins	20
苜氯菊酯	Permethrin	20
噻虫嗪	Thiamethoxam	20
联苯菊酯	Bifenthrin	30
三氯杀螨醇	Dicofol	50

Table 2

Our pesticide limit compared with the EU requirements, the Japanese standard				
Chinese name	English name	China Limited (mg/kg)	Japan Limited (mg/kg)	EU Limited (mg/kg)
苯醚甲环唑	Difenoconazole	10	10	0.05
吡虫啉	Imidacloprid	0.5	10	0.05
草铵膦	Glufosinate-ammonium	0.5*	0.01	0.1
草甘膦	Glyphosate	1	1	2
除虫脲	Diflubenzuron	20	20	0.1
哒螨灵	Pyridaben	5	10	0.05
丁醚脲	Diafenthiuron	5*	20	0.01
多菌灵	Carbendazim	5	10	0.1
氟氯氰菊酯	Cyfluthrin	1	20	0.1
氟氰戊菊酯	Flucythrinate	20	20	0.1
甲氰菊酯	Fenpropathrin	5	25	2
联苯菊酯	Bifenthrin	5	25	5
硫丹	Endosulfan	10*	30	30
氯氟氰菊酯	Cyhalothrin	15	0.01	1
氯菊酯	Permethrin	20	20	0.1
氯氰菊酯	Cypermethrin	20	20	0.5
灭多威	Methomyl	3	0.01	0.1
噻虫嗪	Thiamethoxam	10	15	0.1
噻嗪酮	Buprofezin	10	20	0.05
杀螟丹	Cartap	20	30	0.1
杀螟硫磷	Fenitrothion	0.5*	0.2	0.5
溴氰菊酯	Deltamethrin	10	10	5
乙酰甲胺磷	Acephate	0.1	10	0.05
滴滴涕	DDT	0.2	0.2	0.2

六六六	HCB	0.2	0.2	0.02
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Note: "*" indicates a temporary limit

Table 2 shows the 25 indicators of maximum levels of pesticide residues in tea in the new standard of March 1, 2013 implementation date. The following is Chinese tea pesticide residue limits in comparison with American, Japan and European.

By comparing Tables 1 and 2, you can see that China's tea pesticide residue standards: thiamethoxam, Fenpropathrin, bifenthrin, permethrin, endosulfan, cypermethrin, deltamethrin seven kinds of pesticides CAC required in pesticide maximum residue limits of standard. Only confirmed intake of a pesticide residue exceeding a certain amount will cause some harm to the human body when, CAC standards for pesticide residues will be included in the standard.

Research the causes of pesticide residues in tea and detection methods

Analysis of pesticide residue in tea Status. Throughout China's tea pesticide residues in the history found that BHC and DDT pesticide was based 90 years ago. State Department specifically prohibit the use of DDT and BHC in tea early in 1972 on fruits and vegetables and other agricultural products. But because farmers over-reliance on pesticides and the surrounding crops also have the use of two highly toxic, high pesticide residues, so pesticide content, although the decline but still exists. But because farmers over-reliance on pesticides and the surrounding crops also have the use of two highly toxic, high pesticide residues, so pesticide content, although the decline but still exists. Until 1983 our government promulgated standards prohibit the production and use of BHC and DDT, which was banned two pesticides sprayed directly on the tea act. Since 1984, pesticide hierarchy began to implement in our country.

In recent years, the international community has detected excessive pesticide gifted musicians too, fenvalerate in China's exports of tea and other products. And because in recent years the international standards for pesticide residue limits become more stringent, which the European Union the most demanding, whether it is the type of pesticide residues in or on its limited, are far stricter than our existing standards, resulting in the export country process tea in repeatedly rebuffed, has formed a technical trade barriers.

Causes of pesticide residues in tea. Since the cultivation of tea in the park much more remote mountainous areas, farmers have not been scientific, effective education on how to reduce the tea pests and diseases know no advanced scientific methods, coupled with the consequences of excessive use of pesticides is not consciousness, leading in the process of planting misuse of pesticides.

- A. Tea main way of pesticide residues. The main pathway of pesticide residues in tea, there are two: 1) direct spray. Directly spraying pesticides on tea, there will be a part of pesticides in foliar surface and still some deep through the skin to the internal organization of tea. After the role of time, light and other in multiple factors, the gradual transition to non-toxic. 2) Indirect access. There are three ways to obtain pesticide on Indirect way: One is the absorption resulting from soil. Another one is Obtained from the water. The rest is Air drift.
- B. Lax government supervision. Although China since 1983 had banned the production or use of HCH and DDT such toxic pesticides, but some farmers in order to achieve resist pests diseases, increase tea production and other purposes, still use this and other pesticides, resulting in tea excessive pesticide residues, seriously affected the export of tea.
- C. Standard did not timely promotion. Farmers have not been learning science, systems for hazardous pesticide use and there is a certain blindness. Although implemented new and more stringent standards, because the promotion is not in place, farmers do not really understand the new standards and clearly. And the absence of effective governance approaches, so farmers rely on pesticides for disease infestation of science to maintain high output of tea, but it does at the expense of the reputation of the quality of tea and Chinese tea for the price.

Conclusion and suggestion

Since Our country is a big country's tea exports, but because there is no scientific cultivation methods, strict management tools and chaos, inadequate standards and other reasons, our product quality and reputation of the tea has not improved. Faced with more stringent international quality standards and more advanced means of detection, only positive action to change the status quo of China's tea is now facing, in order to make tea exports out of the woods, re-establish the brand and reputation in the international arena.

First,Standards are the basis for everything, only to establish a unified and perfect system of quality and safety, in order to further the implementation process.For existing standards, to speed up the integration, improve the speed of standard system tends to improve as soon as possible, to avoid duplication, the cross, the requirements of national and local indicators, industry and corporate standards are not uniform among the problems. Similarly, with more perfect quality management system, and ultimately correct, strict management tools. New standards in a timely manner to promote and popularize, has banned the use of pesticides should be strictly regulated.

Second,Strengthen pesticide residues means of detection capability that can monitor both the quality and safety of tea does not produce tea, but off in the production process, the foundation also established a new standard.Compared to Japan where the same species as the more than 80 kinds of pesticides in tea producing countries, but Japan limits on pesticide residues in tea indicators higher targeted, but China did not have a complete laboratory can detect use in tea .

Third,accelerating the development of alternatives to pesticide speed, or using of organic fertilizers alternatives to pesticides, or reducing misuse of pesticides from tea cultivation process are also an effective means to reduce pesticide residues in tea.

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