

**PC-8**

**A Case Study for Multi-pesticides Residue Screening Test of Organic, Pesticide-free, and Conventional Rice Collected at Retail Markets in Korea**

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**[Introduction]**

There are various certification marks in Korea, including organic and pesticide-free. Organic and pesticide-free labeling have in common that pesticides must not be used for more than three years in the cultivation process. The difference is whether or not chemical fertilizers are used. In the case of an organic mark, chemical fertilizers must not be used at all. But in case of pesticide-free mark, chemical fertilizers can be used up to 1/3 of the recommended amount of fertilizer. This study shows the possibility of authentication about Ecofriendly marks through pesticide residue analysis.

**[Materials and Methods]**

In this study, conventional (CR), organic (OR), pesticide-free brown rice (PFR) samples were purchased in the Korean retail markets. Brown rice was polished using a home rice polishing machine and was prepared as polished rice and rice bran. After lyophilization (-70°C, ≥2 days) and pulverization (≤400 μm), the extraction and purification process of multi-pesticide in rice sample were carried out in a Quick Easy Chef Effective Rugged and Safe (QuECHERS) method. Then, the analysis process was conducted by LC-ESI MS/MS and GC-MS/MS.

**[Results and Discussion]**

There were no pesticide residues in OR and PFR samples; however, pesticides were detected in 4 out of 7 CR samples. According to rice grain milling state, brown rice had five types of pesticides including ferimzone and hexaconazole. A polished rice only had tricyclazole; 15 pesticide residues such as azoxystrobin, chlorantraniliprole, etofenprox, and others were found in rice bran samples. However, all pesticide residues detected in this study were far below the Korean MRL standard for each pesticide. This result shows that the limitation between CR, OR, PFR through a pesticide residue analysis, which is a common certified manner for ecofriendly agroproducts, is unclear. Therefore, another alternative discrimination method for ecofriendly authentication should be timely considered.

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