

# Food & Nutrition

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## Organic food, functional food, health and welfare: Its prospect in Indonesia

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Organic food, cultivate without chemical fertilizers or pesticides and are sold without adding preservatives and synthetic ingredient enhancers. It would be very good for health maintenance, especially organic food that have special function for prevention diseases, called functional food, because, they promote optimal health and help reduce the risk of disease. The question is, there is no compelling data that demonstrate clear superiority of organic over non-organic foods, except that organic products must be certified by an international organizations or government bodies, such as the Institute of Marketecology Organization (IMO) in Swiss. This paper described: 1) The different nutrition value between organic rice (white, red dan black) and non-organic one and its function for health and 2) The prospect of organic rice farming in Indonesia to achieved welfare. The data were derived from some literatures reviewed, focused on organic rice. It was found that: 1) "Black rice" has the highest nutrition value compared to "Red and White Rice". 2) The center of organic rice farming in Indonesia found in all provinces of Java, mostly found in West Java with total of 10 districts. A union of farmers' group (Gapoktan) in West Java already exports their production, since 2009 and over 2016 already exported to 9 countries, including USA. This organic farming definitely increases the welfare of the farmers. Therefore, Indonesian government needs to expand land for organic rice farming in other areas of Indonesia. These informations are worth for policies concerning: efforts to increase the motivation of farmers to produce organic food, socialization of organic food as functional food to people as consumers and as the base of policies on organic food production and process.

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## Simultaneous detection for multiplexed mycotoxins by using immunoassay and confirming methods in food

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Multiplexed mycotoxins with strong carcinogenesis and toxicity are fatal threats in food safety, and require highly sensitive and high-throughput detections greatly. Rapid immunoassay and confirming detection methods play a critical role on two sides of one coin. In the rapid immunoassay, a series of high specific and high affinity monoclonal antibody, recombinant antibody, and nanobody against aflatoxin B1 (AFB1), ochratoxin A (OTA), and zearalenone (ZEA), etc, were developed as the key recognition reagents. Based on these specific antibodies, simultaneous detection for multiplexed mycotoxins was studied by using the Au (or Europium)-based lateral flow strip and non-fouling antigen microarray. The limit of detection was lowered down to pg/mL level (as 0.3 pg/mL), depending on mycotoxins in food samples. On the other hand, simultaneous confirming detection method based on HPLC-MS/MS was investigated. Either multiplexed immunoaffinity column or solid phase extraction column was used in the sample extraction. The internal standard allowed precise determination of mycotoxins regardless of matrices. Multiplexed mycotoxins (AFB1, B2, G1, G2, OTA, ZEA, etc.) were successfully identified by using a multi-immunoaffinity column in a single run. Furthermore, a promising proposal was suggested to achieve the rapid, sensitive, ultra high-throughput detection of 96-384 contaminants in food and feed, including biotoxins, pesticides, veterinary drugs, etc., based on immunochemiluminescence biosensors using Hadamard transformation imaging (iHT).

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