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組換え農作物の安全性評価のための食品成分データベースの作成

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Food Composition Database for Safety Assessment of Genetically Modified Crops as Foods and Feeds

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Abstract

Genetically modified (GM) crops have been increasingly entering into the market in recent years. The most common genetic modifications in crops confer an herbicide or an insect resistance to the plant, and some genetically modified plants anticipated with altered nutrient composition, functionality, and medicinal properties. In Japan, 58 GM crops have already been authorized and considered marketable. However, many concerns about incoming GM crops have been expressed by consumers, and the concerns are mainly focused on the safety assessment of GM crops intended for human consumption. While the most important factor taken into account in the safety assessment is the primary effect derived from newly introduced protein, possible unintended effects attributed to the insertion of defined DNA sequences have to be carefully examined in parallel. However, food is complex mixtures of compounds characterized by wide variation in composition and nutritional values. The food constituents are significantly affected by cultivars and environmental factors and thus very difficult to detect any potential adverse effects. A comparative approach focusing on the determination of differences between the GM food and its conventional counterpart will elicit potential safety issues and is considered the most appropriate strategy for the safety assessment of GM foods. For the efficient safety assessment of GM foods, accumulation of food composition data with wide variation under usual cultivation conditions and standardized validated methodologies in conventional foods is indispensable. To achieve this, we developed an internet-accessible food compound database comprising macro-, micro-nutrients, antinutrients, endogenous toxicants, and physiologically active substances of staple crops, such as rice and soybean.

Keywords：遺伝子組換え農作物、安全性評価、食品成分、データベース
Genetically modified crop, Safety assessment, Food composition, Database

I　緒言

現在、バイオテクノロジーの進歩にはめざましいものがあり、遺伝子組換え技術についても医療・食料・環境などの分野で様々な開発が進んでいる。農業分野においても実用化が進み、急速な勢いで遺伝子組換え作物の商業栽培が進行している。現在、主として除草剤耐性、害虫抵抗性などの特性を備えたダイズやトウモロコシが栽培されているが、

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