学位論文審査結果の要旨

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（学位論文審査結果の要旨）

An Integrative Evaluation Method for the Biological Safety of Down and Feather Materials

著者らは論文において下記の内容を述べている。

Background: Down and feather materials have been commonly used and promoted as natural stuffing for warm clothing and bedding. These materials tend to become more allergenic as they become contaminated with microorganisms, in addition to being subjected to several kinds of chemical treatments. The biological or chemical contaminants in these materials pose a major risk to human health, to consumers and manufacturers alike. Here, we report the development of an integrative evaluation method for down and feather materials to assess bacterial contamination and in vivo toxicity.

Methods: To assess bacterial contamination, we quantified 16S ribosomal RNA, performed culture tests, and established a conversion formula. To determine in vivo toxicity, we performed a zebrafish embryo toxicity testing (ZFET).

Results: Washing the material appropriately decreases the actual number of bacteria in the down and feather samples; in addition, after washing, 16S rRNA sequencing revealed that the bacterial compositions were similar to those in rinse water. The ZFET results showed that even materials with low bacterial contamination showed high toxicity or high teratogenicity, probably because of the presence of unknown chemical additives.

Conclusions: We established an integrative evaluation method for down and feather safety, based on bacterial contamination with in vivo toxicity testing.

羽毛原料の安全衛生を評価するqPCR法による細菌の定量ならびにゼブラフィッシュを用いた羽毛有害性試験などの新規安全性評価技術を提示した論文であり、学術上極めて有益であり、学位論文として価値あるものと認めた。

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