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Food Fraud Prevention through Traceability within the Food Supply Chain. A Scoping Review

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Food fraud is a form of intentional adulteration of a product, usually for the purpose of an economical gain. Food fraud is committed regularly and may vary in form, depending on the nature of the product or target. This research work investigates the effectiveness of various food supply chain traceability methods in combating fraud by reviewing the literature in a systematic way (scoping review).

The scoping review was carried out in accordance with the Joanna Brings Institute methodology which includes three steps search. The review was carried out using 4 different search engines. Only peer reviewed journal articles were included, grey literature was excluded from the review. A set of key words was used with the application of Boolean operators. Screening commenced in two separate stages: (1) title & abstract screening and (2) full text screening. Data has been presented in written and tabular formats.

The initial search resulted in 486 articles, after removal of duplicates the figured decreased to 306. First screening stage led to further exclusion of 248 articles. Another 31 were excluded after second screening leaving 27 peer reviewed journal articles for data extraction.

Main findings indicate that increased traceability has a positive impact on the security of food supply chains in relation to adulteration. However, 'fraudsters' seem to stay ahead of the game as new technologies are constantly developed to mask adulteration and falsify test results. 'Blockchain' analysis has been outlined as the most popular traceability system used across modern food supply chains. The disadvantages of increased traceability can be attributed to high costs and problems with integrity where human motivation plays a crucial role.

Despite the extensive costs and technical difficulties, application of modern traceability assessments is key to food safety. To help to combat fraud, businesses must focus more on vulnerability assessments.

