OPEN ACCESS Freely available online

Journal of Clinical and Experimental Pharmacology

ISSN: 2161-1459

Commentary

A Short Note on Protein Detection with Antibodies

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ABOUT THE STUDY

Clinical diagnosis, treatment, and biological research all depends on protein detection. Protein detection determines the concentration and quantity of various proteins in a sample. Protein detection in various organisms can be performed using a variety of methods and approaches. Protein detection has shown to have significant clinical, treatment, and biological research effects. Protein has been identified in a variety of foods, including soybean (bean), walnut (nut), and beef, using a protein detection approach (meat). Protein detection methods for different types of food change depending on the food's properties, such as bean, nut, and meat. Protein detection has a variety of applications in several industries. Food allergies have become a common disease in recent years. Food allergies in the clinical symptoms show a variety of symptoms, range from slight itching in the mouth and swelling of the lips to severe anaphylactic reactions with deadly consequences.

According to estimates, roughly 2% of adults and 8% of adolescents in developed countries suffer with hypersensitivity. To limit the risk of experience responses, careful restriction of these allergic foods is the most effective treatment. As a result, adequate labeling of potentially allergenic substances included in food products is critical and necessary, which can be checked via protein detection. Because of its high fiber content and ease of processing, foods have been used in processed foods all over the world, including soybean milk, tofu, meat alternatives, and brewed soybean products like miso, soy sauce and tempeh. Microorganisms are used in the brewing process for brewed soybean products such as miso, soy sauce, plain yogurt, and tempeh. The allergen city for brewed soybean products remains. These brewed soybean products are popular and traditional in Asian nations. In the last several years, the number of patients suffering from soybean allergies has increased, as has the range of uses for soybean.

To produce soybean protein, research has used a variety of methods and procedures over the last 30 years. These methodologies and procedures are directly adaptable to a laboratory setting. In the molecular biology spectrum, novel and traditional approaches were developed and evaluated. The Enzyme Linked Immunosorbent Assay (ELISA) methodology, which has a high susceptibility and specificity, is a reliable approach for studying soybean proteins by using a protein that can identify a foreign molecule.

This has been discovered as a vacuolar protein with a 34 kDa molecular block. In lab testing, the ELISA exhibited sufficient repeatability and reproducibility. However, it is unable to analyze soybean protein found in brewed soybean products. ELISA assays to measure soybean protein have been conducted in a variety of research. In processed foods, however, measurement is difficult to be effective due to reproducibility, cross-reactivity, and low repeatability. These methods are unable to detect soybean protein that has remained in brewed soybean products.

In contrast to the previous method, the present abstraction technique involves a heating process to evaluate the presence of soybean protein in brewing products. The present abstraction technique can be used to reveal soybean protein in brewed soybean products since the heating process can deactivate microbial proteolytic enzymes. The following is an example of the thermal abstraction technique. 19 mL of abstraction buffer is mixed with five glass beads of five mm diameter and 1 g of food homogenate to produce good dispersibility for the specimen in the extraction buffer to carry out the heating process. The mixture is abstracted under 25, 40, 60, 80, and 100° variable temperature through heating in a water bath followed by observing every 5 minutes at 5, 15, and 60 minutes variable time. Food abstractions produced using the prior and present procedures are centrifuged for 20 minutes at 3000 g, and the supernatant is filtered off using filter paper. The filtrate is collected and used as the food specimen abstract for analysis immediately. To use ELISA to reveal soybean proteins, calibration standard solutions must be produced.

The ELISA does have a detection limit of 1 g/g, and it cannot assess soybean proteins in brewed soybean products because the proteins in soybean are degraded by microbial proteolytic enzymes that remain in the brewed goods. The presence of microbial proteolytic enzymes in brewed soybean products may prevent the detection of soybean protein storage. The current abstraction technique uses microbial proteolytic enzymes to control protein degradation. Heating, pH, and protease inhibitors in general can all limit microbial proteolytic enzymes.

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Received: August 05, 2021; **Accepted**: August 19, 2021; **Published**: August 26, 2021

Citation: Voku A (2021) A Short Note on Protein Detection with Antibodies. J Clin Exp Pharmacol. S8: 006.