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Lectins in Dry Legumes

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Bureau of Chemical Safety
Food Directorate
Health Products and Food Branch



Canada

Lectins in Dry Legumes

The Issue

Lectins are naturally-occurring plant proteins that are found at low levels in the edible parts of commonly consumed fruits and vegetables such as apples, bananas, cucumbers and sweet peppers, and in varying levels in many types of legumes including soybeans, lentils, lima beans and kidney beans.

Lectins, also called haemagglutinins, are toxic to humans if consumed in large amounts. Canadians are rarely exposed to levels of lectins that cause serious health effects. However, there are occasional reports of short-term adverse symptoms, most commonly associated with eating improperly cooked red kidney beans. Uncooked and improperly cooked red kidney beans can contain elevated levels of a certain lectin, phytohaemagglutinin, relative to other types of legumes.

Health Effects

Canadians are exposed to low levels of naturally occurring lectins through certain foods in their diet. Consumption of these low levels of lectins do not pose a safety concern to humans, however, undesirable health effects can result from exposure to higher levels of these compounds.

Incidents of foodborne illness associated with undercooked red kidney beans have been reported in Canada and Australia in the 1980s and in the United Kingdom in the 1970s and 1980s.

Illness is usually related to the ingestion of improperly cooked red kidney beans either alone or in prepared dishes such as salad, casserole, or chili. Symptoms generally appear within 1 to 3 hours after consumption of improperly cooked red kidney beans. Onset is usually marked by extreme nausea, followed by vomiting and diarrhoea. Some individuals also report abdominal pain. Those affected rarely require hospitalization or treatment, and adverse symptoms generally subside within a short period of time.

What is the Government of Canada Doing?

The Government of Canada is committed to food safety and to informing Canadians about ongoing and emerging food safety issues.

Health Canada shares information with Canadians by posting information on its website, by issuing news releases, by directly responding to citizen inquiries, through scientific publications, and through electronic notification via the Department's various "e-notices". You can subscribe to Health Canada's [Food Additives e-Notice](#), [Chemical Contaminants e-Notice](#), and [Food Allergies e-Notice](#), free services that send subscribers information about regulatory and scientific developments relating to these subjects in Canada.

What Can You Do?

The proper preparation of dry red kidney beans and other dried legumes can reduce the potential for foodborne illness.

The advice below is specific to dry red kidney beans. Exposure reduction strategies have focused on this food due to the more frequent reports of adverse health effects associated with its consumption relative to other legumes.

Note that the heat treatment applied during the canning process is considered adequate to sufficiently destroy the lectins in canned red kidney beans, which do not require further cooking.

Minimizing exposure to lectins in dry red kidney beans

- Soak (rehydrate) dry red kidney beans in a volume of water 2 to 3 times greater than the volume of beans for at least 5 hours. Discard the water used for soaking.
- Cook pre-soaked kidney beans by boiling vigorously for at least 10 minutes.
- Note: Slow cookers and crock pots do not reach sufficiently high temperatures to destroy lectins, and therefore should not be used to cook dry red kidney beans.

Additional Resources:

[Safe Food Handling Tips](#)