Introduction and Background

In this guide

This is a paper for discussion. This does not represent the views of the Committee and should not be cited.

Introduction

1. The European Food Safety Authority (EFSA) published a public consultation on a draft Opinion on the risks for human health related to the presence of plant lectins in food on 24th of July 2025 (see Annex A for link). The COT are being asked to review the draft opinion and provide any comments they may have; the Secretariat will then submit the Committee's comments to EFSA.

2. A document has been provided in the Teams folder for Members to provide comments before and after the Meeting but Members can also send any additional comments directly to the Secretariat. The closing date for the public consultation is the 18th of September 2025. Please provide any comments latest by Friday the 12th of September, comments received after this deadline will not be included. Please add the section and/or line number where possible.

3. The following paper provides a brief overview of the draft EFSA Opinion.

Background

4. EFSA were asked by the European Commission (EC) to assess the risk posed by the consumption of plant lectins in food. EFSA have not previously performed a risk assessment of plant lectins.

5. Following a request from the Federal Ministry of Food and Agriculture (BMEL), the German Federal Institute for Risk Assessment (BfR) published a statement on the health risks related to lectins in plant-based food in 2024 (BfR, 2024). The BfR highlighted several potential adverse effects that could arise from the consumption of plant lectins, especially in children, including nausea, abdominal pain, and diarrhoea. As lectins can be deactivated through heat treatment, cooking and preparation techniques can influence the adverse effects of lectins. The BfR also highlighted the potential allergy risk from lectin consumption and recommended that the mechanism be investigated further.

6. The EFSA opinion defined lectins as 'proteins involved in the specific and reversible binding to simple and complex carbohydrates'. Whilst there are up to 13 groups of identified plant lectins, only five groups were considered within

the EFSA opinion as these were regarded to have a potential risk to human health. The five groups were:

- Legume lectins: This groups includes Lens culinaris agglutinin (LGA) from lentil (Loris et al., 1994), Pisum sativum agglutinin (PSA) from pea (Prasthofer et al., 1989), favin from broad bean (Reeke and Becker, 1986), phytohaemagglutinin-L (PHA-L) and phytohaemagglutinin-E (PHA-E) from kidney bean (Hamelryck et al., 1996 and (Nagae et al., 2016), concanavalin A (Con A) from jack bean, soybean agglutinin (SBA) from soybean (Olsen et al., 1997), and peanut agglutinin (PNA) from peanut (Banerjee et al., 1996).
- Galanthus nivalis agglutin (GNA)-related lectins: The name for the group is derived from the snowdrop (Galanthus spp.) (Hester et al., 1995). The main lectins of this group relevant to the opinion were Allium sativum agglutinin (ASA) from garlic (Van Damme et al., 1992; Chandra et al., 1997), Allium cepa agglutinin (ACA) from onion, and Allium porrum agglutinin (APA) from leek (Van Damme et al., 1998).
- Jacalin-related lectins (JRL): This group of lectins can be found in plants of the Moraceae family and include jacalin from jackfruit (Sankaranayanan et al., 1996), artocarpin from chempedak (Pratap et al., 2002), Maclura pomifera agglutinin (MPA) from Osage orange (Huang et al., 2010).
- Hevein-like domain-containing lectins: this group was represented in the opinion by pokeweed mitogen PWM (Börjeson et al., 1966), and wheat germ agglutinin (WGA) from wheat (Wright, 1990).
- Type 2 ribosome-inactivating proteins (RIP-2): this group contains toxic lectins including ricin (castor bean), arbin (jequirity bean). While these are toxic and inedible, EFSA considered them as they could be consumed accidentally or intentionally.

7. In general, there were limited data available on the occurrence and consumption of active lectins within food.