

# Survey on the consumption of cinnamon-containing foods and drinks

Research programme: [Behaviour and perception](#)

Study duration: February 2009 to June 2010

Project code: A01073

Conducted by: University of Leeds

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## Background

Following safety evaluations on coumarin, the European Food Safety Authority (EFSA) set a Tolerable Daily Intake (TDI) of 0.1 milligrams per kilogram bodyweight per day. A TDI is an estimate of the amount of a substance, expressed on a body weight basis that can be ingested over a lifetime without appreciable risk. In addition there are limits set by legislation on the amount of coumarin a variety of flavoured foods and drinks may contain.

This survey will enable the Agency to compare coumarin intake levels to the TDI.

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## Research Approach

This survey has four key tasks:

- Prepare a list of cinnamon-containing foods by checking food labels and discussions with manufacturers and/or retailers.
- Organise and conduct a food consumption survey to determine the consumption of cinnamon-containing foods by the UK population.
- Identify commonly-consumed foods containing cinnamon from tasks 1&2 and analyse these for coumarin levels.
- Estimate the intake of coumarin by the UK population by combining the level of coumarin in foods with the food consumption data (tasks 2&3).

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## Results

From the list of foods containing cinnamon, cassia and/or mixed spices, 80 foods were prioritised and then analysed for coumarin using HPLC. A Food Frequency Questionnaire, FFQ, was developed using this food list and a cinnamon survey was conducted in a representative sample of UK population including adults (n= 1011), children (n=162) and South Asians (n=100) using picture cards and portion sizes. Dietary exposures of coumarin were then calculated. The foods containing the highest levels of coumarin were spices: ground cinnamon (1657 mg/kg), mixed spice (456 mg/kg) and garam masala (124.5 mg/kg in retail samples and 56.5 mg/kg in homemade samples). Some curry spices including, tandoori, Madras, curry spice, korma and tikka contained 52-63.6 mg/kg of coumarin whilst cinnamon stick contained 86.7mg/kg. Several foods did not contain coumarin above the detectable level of 1 mg/kg. Average dietary exposure

to coumarin in the UK population at the medium (i.e. 50th percentile) was 0.0018 mg/kg bw/day for adults and 0.0015 mg/kg bw/day for children; the South Asians group exposure was higher at 0.022 mg/kg bw/day. High level consumer exposure (97th percentile) was 0.023 mg/kg bw/day for adults, 0.012 mg/kg bw/day for children and 0.076 mg/kg bw/day for the South Asian population. All these exposures are less than the TDI for coumarin of 0.1 mg/kg bw/day.

Research report

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