

Final Report

Retail survey of T-2/HT-2 toxins in oat based
products

FS102126

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HallMark
Veterinary & Compliance Services

Title: Retail survey of T-2/HT-2 toxin levels in oat based products

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Retail Survey of T-2/HT-2 toxin levels in oat based products

1. Introduction

1.1 Background

The primary objective of the retail survey was to provide chemical occurrence data for the mycotoxins T-2 and HT-2 in oat based food products, to inform an exposure assessment, based on samples collected across the United Kingdom. The secondary objective to observe any differences in toxin levels in products derived from the 2014 oat harvest in Scotland and England.

The samples to be collected were 200 x oat based products from major retailers (Tesco, Asda, Sainsbury, Morrison, Waitrose, The Co-operative) health food chains, online retailers and a small number of convenience type stores. The type of oat products to be collected was made up of five food groups.

In order to address a secondary aim of comparing toxin levels for organic and conventionally grown oats, within the 5 food groups a small number of organic products were surveyed.

Sample collection was completed by the end of March 2015. Some additional samples or resamples were purchased in early April. After this time the collection of data was completed, quality checks and brand notification carried out.

Table 1: Food groups and summary numbers of samples per food group

Food Group/ sub category	No of samples
Porridge oats	56
Oat based breakfast cereals	56
Oat biscuit products	67
Other products (black pudding & oatmeal bread samples)	6
Oatmeal	15

2. Sampling Strategy

2.1 Selection of geographic locations

A key specification of the design was that it would feature regional sampling representing the whole of the UK: England, Wales, Scotland and Northern Ireland. To this end the NUTS (Nomenclature of territorial units for statistics) regions of the United Kingdom was used to achieve regional representation. Developed by the European Union NUTS are the administrative divisions of countries for statistical purposes.

All the selected locations were based on population size, and wherever possible NUTS regions with the largest population were selected. There are a total of 12 NUTS1 regions in the UK (9 in England, and 1 each for Scotland, Wales and NI). The selection for NUTS1 regions in England was primarily based on population size. To achieve regional representation within England the NUTS regions with the largest population size in the south (UKJ) and in the North (UKD) were selected. Since there is only one NUTS1 region for Scotland, Wales and NI, the NUTS2 region with the largest population size was selected.

The NUTS1 population sizes were used to identify 2 areas in England and then the NUTS2 population size to identify 1 area each for Scotland, Wales and N. Ireland to be included in the sampling. Within each selected NUTS1/NUTS2 regions the sampling location was then narrowed based on the NUTS3 population size within the relevant area.

5 locations:

England (UKJ and UKD): Kent CC, Greater Manchester South*

* Greater Manchester South was put forward instead of inner London (UKI) to obtain some representation in the North West.

Scotland (UKM3): Glasgow

Wales (UKL1): South West Wales

Northern Ireland (UKN0): East of Northern Ireland

2.2 Types of retailer selected

The selected retailers for the survey were Sainsbury's, Asda, Tesco, Wm Morrison and Waitrose. The Co-operative was also included as a reflection of its market share. The major health food chain Holland & Barrett, convenience type stores and a number of online health food retailers made up the remaining purchasing points.

2.3 Retailer Market share and allocation of samples

The number of samples allocated to the large retailers reflected the market share of the top six retailers as per Mintel data, the remaining samples were divided between the smaller retailers equally; health food high street retailers (i.e. Holland & Barrett), online and convenience stores.

Market research was carried out online to create a list of approx. 260 products with an oat content of > 40%, proportionally by retailer market share i.e. numbers of items selected from each of the top six retailers reflected approximately the market share as defined in Figure 1. Items were chosen that met the criteria of the food groups and with consideration given to brand market share and the inclusion of organic products and those of Scottish provenance. This larger number of products than the 200 required was to provide surveyors with alternatives, to counter any availability issues and to help prevent duplication of product from the major retailers.

Figure 1: Mintel 2013 LEADING GROCERS: SHARES OF ALL GROCERS' SALES, 2012¹

Tesco (UK)	27%
Asda	15%
Sainsbury	14%
Wm Morrison	10%
The Co-operative Food	5%
Waitrose	4%
Marks & Spencer	4%
Aldi	3%
Lidl	2%
Spar	2%
Iceland Foods	2%
Musgrave	2%

Premier	1%
Costcutter	1%
Nisa Retail	1%

Table 2: Percentage of samples by retailer

Retailer ID	Retailer	Retailer Target Share	Actual Samples	Actual Percentage Retailer
1	Tesco	26.6	52	26
2	ASDA	15.1	31	15.5
3	Sainsbury's	14.3	30	15
4	Wm Morrison	10.4	21	10.5
5	Co-operative	5.4	7	3.5
6	Waitrose	4.1	10	5
7	Holland &Barrett*	8.03	11	5.5
8	Convenience stores	8.04	16	8
9	Online	8.03	22	11
	Total	100	200	100

*including Holland & Barrett purchased online

2.4 Required sample size

The sample size for each sample was 1kg total weight, made up of a minimum of 3 packs. All packs were required to come from the same batch. Some samples collected were larger than 1kg due to the number of packs required. Oats, Oatmeal and Oat were found to often come in pack sizes of 500g and over

3. Sample Categories

3.1 Target products and food items

A specification of the study was that all oat based products/ food items including biscuits and cereal bars should have an oat content >40%. Online and store visit market research was carried out prior to the survey to gather data about food items available from the selected retailers. Some food items with lower oat content, with oats as the largest ingredient were accepted for analysis. Where possible, product market share data was used to inform brand representation. Consideration was also given to the secondary requirements of the survey, that organic food products and those of Scottish provenance were also included.

The final list of selected food items to be targeted was referred to the FSA project officer to ensure that the required balance had been achieved. Factors determining the products to be targeted and were as follows:

- Items that met the 40%> oat content criteria

- Items that fit the definition of the food groups as provided by the FSA
- Availability of product at the selected retailers
- Inclusion of the dominant brands, organic food items and those labelled of Scottish provenance

4. Sample Collection

4.1 Trained Sample Collectors

An individual sample collector was allocated to one of the selected 5 locations. The collectors were selected for locations based on their proximity to a selected area. The sample collectors then received training specifically tailored to the requirements of this Retail Survey including:

Specification for choice of products

Following purchasing instructions

Numbering of the samples

Recording the data

How to photograph the samples

Packing and maintaining the appropriate temperatures of the different food items

Ethics and adherence to the requirements of the study

All 200 Samples were collected over a week long period w/c 16/03/2015

4.2 Allocation of samples to location

Using the defined numbers of samples for each food group, random allocation of the food items was made by food group and by retailer to each location. The 200 oat products were randomly allocated to the 5 UK locations based on population size (at NUTS1 level). As a consequence England had more products than other countries.

Table 3: Distribution of product to locations

Location ID	Location	NUTS1	Population	Percent	Porridge	Cereal	Biscuit	Oatmeal	Other		
1	Kent CC	UKJ	8724737	0.34	19	19	23	5	2		68
2	Greater Manchester South	UKD	7084337	0.27	15	15	18	4	2		54
3	Glasgow	UKM	5313600	0.2	11	11	13	3	1		40
4	Swansea	UKL	3074067	0.12	7	7	8	2	1		24
5	East of Northern Ireland	UKN	1823634	0.07	4	4	5	1	0		14
									Total		200

4.3 Sample Purchasing

Sample collectors were provided with an electronic 'shopping list'. This contained all the information the sample collector required as detailed below. Each surveyor was supplied with a shopping list for each of the selected retailers. It was up to them to locate a branch of the named retailer within the NUTS area.

In the event that the named product was not in stock or the required volume/ batch was not available, a suitable alternative product was listed for most items .This was possible because the original list of 260 products, more than the required number, was created to manage the aforementioned availability issues and help prevent duplication.

Where availability of a food group was limited in the major retailers as with Oatmeal which is a niche product, any lack of availability was made up by purchasing from online retailers; market research showed there was a much wider choice of product.

5. Sample data reporting and dispatch to laboratory

5.1 Sample Numbering

250 Pre-printed LIMS stickers in triplicate were provided to be attached to all samples. They were in sets of numbers: S15-038761 to S15-038986 and S15-039112 to S15- 039136. This was to provide the sample collectors enough for every sample’s with some spares if required.

Each sample was assigned one LIMS number by the collector, which was then recorded with the other data as detailed below. Numbers were not necessarily in running order.

5.2 Data reporting

Each sample collector was required to complete an excel form that corresponded to their shopping list. It captured all of the agreed reporting data, for each sample, and as listed below. This was completed as part of their sample collection, the excel form would then be saved to a file shared with Hallmark operations.

- LIMS Number
- Sample date & time
- Region, location number & location name
- Collector name
- Food group name
- Brand name
- Product description
- Weight or volume of sample and number of units
- Manufacturer Name
- Retailer name
- Country of origin
- Durability & batch code
- Date of dispatch
- Where dispatched

LIMS Number	Sample date	Sample Time	Region	Geographic location number	Geographic Location name	Collector name	Group name	Food Item	Brand name	Product description	Weight/volume of each sample	Units of mass	No of units purchased to make sample
S15-038830	16/03/2015	14:29	6	1	Kent CC	Elinor Williams	Oats	Waitrose LOVE Life Gluten Free Porridge Oats	Waitrose LOVE life	Porridge Oats - Free from Gluten	400	G	3
S15-038829	16/03/2015	14:29	6	1	Kent CC	Elinor Williams	Oat Biscuit Products	Nairns Organic Oatcakes	Nairn's	Organic Oatcakes	250	G	4
S15-038828	17/03/2015	11:35	6	1	Kent CC	Elinor Williams	Oat Biscuit Products	Organix cocoa & raisin cereal bars	Organix Goodies	Cocoa & Raisin Soft Oaty Bars	180	G	6
S15-038831	16/03/2015	14:29	6	1	Kent CC	Elinor Williams	Oatmeal	Rude Health The Oatmeal	Rude Health	Organic Oatmeal Porridge	750	G	3

Figure 1: Example of a section of an excel data input form FS102126 Retail Survey of T-2/HT-2 toxin levels in oat based products

5.3 Sample photographs

As part of the data collection process all samples were photographed. Collectors were asked to capture visual references of all the required data. This could then be checked against the finished data. For most samples this required a number of photographs to be taken of a product.

5.4 Dispatch of samples

Hallmark surveyors dispatched samples directly to the laboratory using Parcelforce express 24 service from their nearest post office or depot. This service provided coverage of the whole of UK, online tracking and electronic proof of delivery.

6. Resampling

6.1 Identification of un-assayable samples

Following the collection of all 200 samples checks were undertaken by Hallmark. As a result of these checks any deviation from purchasing instructions or mistakes made in product selection were identified and these un-assayable samples were resampled. Resampling also included one sample that had perished at the laboratory and 2 samples that a surveyor had been unable to obtain and a number where the required volume/ batch had not been purchased.

6.2 Resampling collection

In total 24 products were resampled. Hallmark provided the sample collectors with a resampling shopping list. Collectors were encouraged as before to research availability of the required items to avoid problems purchasing or duplication of product where possible.

7. Final project administration

7.1 Hallmark inform brand owners that their products have been included in the survey

Following completion of the survey all brand owners and manufacturers were notified by email or post (when requested) that their products had been included in the survey. The letter (appendix A) gave details of the specific samples including LIMS number product description and batch/lot number.

Appendix A



Title & Name
Company Name
Address
Address

To whom it may concern,

The Food Standards Agency carries out a wide-ranging programme of food surveys:

- to check for consumer safety
- to obtain data on the composition of food
- to develop its policies on food safety
- to assess the effectiveness of legislation, codes of practice and other measures.

Details of published surveys are available on our web site.
<http://www.food.gov.uk/science/research/surveillance/>

The Food Standards Agency is currently undertaking a survey to investigate the occurrence level of the toxins T-2 and HT-2 in oat based products. The samples were collected from stores in March 2014.

You will wish to be aware that the sample(s) for which the details are attached have been included in the survey and have now been sent for analysis. Once these have been analysed the results will be published by the Food Standards Agency, together with details of the products, including brand name, the name of the manufacturer/brand owner shown on the label, batch code and pack size. Furthermore, you can expect the Food Standards Agency to inform you of your brand's individual results prior to publication. The sample(s) will be homogenised and divided into sub-samples. You may request a sub-sample for your own analysis.

Please do not hesitate to contact me if you have any queries. You may wish to email a confirmation that you have received this letter but a nil response is acceptable. Acknowledgements should be received within two weeks of the date of the letter.

Email DSU@foodstandards.gsi.gov.uk

Yours faithfully
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