FOOD STANDARDS
Australia New Zealand
Te Mana Kounga Kai – Ahitereiria me Aotearoa

FSANZ ANALYTICAL SURVEY OF ARSENIC, LEAD AND TIN IN SHELF-STABLE PEACH, PEAR AND APRICOT PRODUCTS

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In April 2015, FSANZ conducted a broad survey of the levels of arsenic, lead and tin in domestic and imported canned and shelf-stable fruit products available in Australia from supermarkets and through catering companies.

The survey was carried out in response to community concerns based on reported results of a study which showed the presence of arsenic in some canned peach products, and that some products had levels of lead and tin that did not comply with the *Australia New Zealand Food Standards Code* (the Code).

SURVEY METHODOLOGY

A total of 45 domestic and imported shelf-stable fruit products (peaches, pears and apricots) were collected from major supermarkets in Canberra or Melbourne, and from catering firms. These products represented a high proportion of available products on the market in this category. Sampling from all states and territories was not considered necessary as these foods are nationally available and not subject to regional variation.

Composite samples were prepared from three individual products, consistent with Australian Total Diet Study (ATDS) methodology. Samples were prepared to maintain the ratio of fruit and juice in the product in order to compare the levels of lead with the maximum level permitted (ML), calculated according to Standard 1.4.1 of the Code.

METHOD OF ANALYSIS

Determination of arsenic, lead and tin in shelf-stable fruits was conducted by the National Measurement Institute (NMI) using inductively coupled plasma-mass spectrometry (ICP-MS) and inductively coupled plasma optical emission spectrometry (ICP-OES) according to National Association of Testing Authorities (NATA) accredited methods. The limit of detection for arsenic, lead and tin was 0.005 mg/kg, and the limit of reporting was 0.01 mg/kg.

ANALYTICAL RESULTS

Analytical results for arsenic, lead and tin in the 45 domestic and imported shelf-stable peach, pear and apricot products are shown in Table 1.

- Total arsenic levels were below the limit of reporting in all 45 supermarket and catering shelf-stable peach, pear and apricot products
- Lead concentrations were below the calculated ML for mixed foods permitted in Standard 1.4.1 of the Code, in all peach, pear and apricot products tested
- Levels of tin were below the ML (250 mg/kg) in all peach, pear and apricot products tested.

RELEVANCE OF RESULTS TO HEALTH RISK ASSESSMENT

This study showed that levels of lead and tin in all domestic and imported products tested were below the maximum levels permitted in the Code. Arsenic was not detected in any product at reportable concentrations. Therefore, no compliance or public health and safety concerns were identified.

Results from the FSANZ survey are consistent with recent advice on surveillance testing conducted by the Department of Agriculture and Water Resources (the Department) for lead and tin in imported shelf-stable fruit at the border. The Department has advised FSANZ that all peach, pear and apricot products tested for lead and tin in 2015 have complied with the Food Standards Code.

Table 1 Analytical results for arsenic, lead and tin in shelf-stable peach, pear and apricot products

Product type	Product	Domestic / Imported	Arsenic (mg/kg)	Lead (mg/kg)	*Calculated Lead ML (mg/kg)	Tin (mg/kg)
Peaches	Product 1	Domestic	<0.01	0.054	0.065	22
	Product 2	Domestic	<0.01	<0.01	0.066	0.022
	Product 3	Domestic	<0.01	0.036	0.063	140
	Product 4	Domestic	<0.01	<0.01	0.075	<0.01
	Product 5	Domestic	<0.01	0.03	0.066	<0.01
	Product 6	Imported	<0.01	<0.01	0.061	50
	Product 7	Imported	<0.01	0.027	0.067	59
	Product 8	Domestic	<0.01	0.014	0.064	28
	Product 9	Imported	<0.01	0.034	0.064	44
	Product 10	Imported	<0.01	0.014	0.058	0.022
	Product 11	Imported	<0.01	0.02	0.068	18
	Product 12	Domestic	<0.01	0.014	0.059	<0.01
	Product 13	Imported	<0.01	0.022	0.060	0.12
	Product 14	Imported	<0.01	<0.01	0.065	50
	Product 15	Imported	<0.01	0.035	0.065	52
	Product 16	Imported	<0.01	0.015	0.064	37
Pears	Product 17	Domestic	<0.01	0.023	0.062	50
	Product 18	Domestic	<0.01	0.03	0.063	57
	Product 19	Domestic	<0.01	0.016	0.059	79
	Product 20	Domestic	<0.01	0.051	0.058	0.059
	Product 21	Domestic	<0.01	<0.01	0.063	0.019
	Product 22	Domestic	<0.01	0.036	0.062	42
	Product 23	Domestic	<0.01	0.021	0.062	110
	Product 24	Domestic	<0.01	0.046	0.063	47
	Product 25	Imported	<0.01	0.016	0.063	47
	Product 26	Domestic	<0.01	0.014	0.062	46
	Product 27	Domestic	<0.01	0.042	0.065	46
	Product 28	Imported	<0.01	0.016	0.062	78

Product type	Product	Domestic / Imported	Arsenic (mg/kg)	Lead (mg/kg)	*Calculated Lead ML (mg/kg)	Tin (mg/kg)
	Product 29	Imported	<0.01	0.011	0.061	64
	Product 30	Domestic	<0.01	0.044	0.063	62
	Product 31	Imported	<0.01	<0.01	0.059	7.2
	Product 32	Imported	<0.01	0.025	0.061	0.025
	Product 33	Imported	<0.01	0.02	0.059	24
	Product 34	Imported	<0.01	0.015	0.065	23
	Product 35	Imported	<0.01	0.031	0.066	140
	Product 36	Imported	<0.01	<0.01	0.075	0.012
	Product 37	Imported	<0.01	0.031	0.064	45
Apricots	Product 38	Domestic	<0.01	0.03	0.061	32
	Product 39	Domestic	<0.01	0.013	0.062	0.024
	Product 40	Domestic	<0.01	<0.01	0.057	0.013
	Product 41	Domestic	<0.01	0.01	0.063	81
	Product 42	Domestic	<0.01	0.011	0.059	32
	Product 43	Imported	<0.01	<0.01	0.062	150
	Product 44	Domestic	<0.01	0.012	0.056	68
	Product 45	Imported	<0.01	0.054	0.067	73

- The limit of detection for arsenic, lead and tin was 0.005 mg/kg, and the limit of reporting was 0.01 mg/kg.
- The ML for tin in Standard 1.4.1 of the Food Standards Code is 250 mg/kg.
- * The appropriate ML for lead in mixed foods such as canned peaches is calculated by assigning the proportion of each ingredient the appropriate ML; for example, the ML for lead in fruit is 0.1 mg/kg; the ML for juice or syrup is 0.01 mg/kg; the results are then summed to derive the relevant ML to apply for enforcement purposes. If canned peaches were assumed to be 80% fruit the relevant ML would be 0.082 mg/kg. No products exceeded the calculated ML for lead.