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

Gravy beef and beef osso bucco – nutrient data

Nutrient data provided by Meat & Livestock Australia

April 2016

Funding

In January 2016, Meat & Livestock Australia (MLA) commissioned analyses on the nutrient composition of raw and cooked gravy beef and beef osso bucco. MLA is a producer-owned, not-for-profit organisation that delivers research, development and marketing services to Australia's red meat industry

FSANZ did not provide any funding for these analyses and was not involved with the collection of samples, quality assurance processes or data validation. FSANZ would like to thank Meat & Livestock Australia for making this data available.

Background

Gravy beef and beef osso bucco are meat cuts from the shin (or leg) of beef cattle. They are essentially the same cuts of meat, except that osso bucco is sold with the shin bone still present, whereas gravy beef is sold without the bone. Both cuts are typically cooked in the same manner, in stews or casseroles.

Figure 1. Osso bucco and gravy beef

MLA has previously supported a number of analytical programs for Australian red meat and this data has been provided to FSANZ for use in NUTTAB and AUSNUT. However shin meat had not been included in these programs. Therefore MLA decided to commission new data for this meat, both raw and after casseroling.

Sampling

Samples were purchased in Melbourne, Australia, in January 2016. A total of seven samples were collected – four samples of gravy beef and three of osso buco. Samples were collected from supermarkets (2 gravy beef) and butchers (2 gravy beef, 3 osso bucco). Sufficient sample was purchased to provide enough meat for analysis raw and after cooking loss.

Melbourne was selected for sampling because it is close to the analytical laboratory, which minimised transport time and potential damage to samples during transport.

Preparation and analysis

Purchases were weighed and separated into sub-samples for analysis raw and cooked. For raw samples, each purchase was separated into muscle (referred to as separable lean), fat, connective tissue (e.g. sinew) and bone and the proportion of these components was recorded. The separable lean portion of each purchase was then transported to the analytical laboratory where equal portions were used to prepare two analytical samples – *gravy beef, separable lean, raw* and *osso bucco, separable lean, raw*.

For cooked samples, an experienced home economist cooked each purchase as they would typically be cooked in the home. Meat was cooked in domestic home cookers set on a low heat setting for 2 hours 20 minutes (gravy beef) or 2 hours 50 minutes (osso bucco) with the addition of approximately 40 mL tap water per kilogram of meat to assist cooking. After cooking, any remaining liquid was drained off and samples were separated into their main

components as for the raw meat. The separable lean portion of each purchase was then transported to the analytical laboratory where equal portions were used to prepare two analytical samples – *gravy beef, separable lean, cooked* and *osso bucco, separable lean, cooked*.

Analysis was conducted at the National Measurement Institute, Melbourne, using established methods of analysis that are also used by FSANZ for their nutrient analyses.

Results

A summary of the results of the analyses of separable lean shin meat is shown in Table 1 below. The results in this table are the average of the separate analyses of gravy beef and osso bucco, weighted for the number of purchases of each.

The separable lean was rich in protein but low in fat and contained substantial levels of niacin, vitamin B12, iron, magnesium, phosphorus, selenium and zinc. Of particular note is the finding of measurable levels of vitamin D in the raw separable lean, which was largely contributed by 25-hydroxy vitamin D3 but also by pre-formed cholecalciferol (vitamin D3). However the long cooking process resulted in no measurable vitamin D activity remaining after cooking.

Table 1: Nutrient composition of shin beef (gravy, osso bucco), raw and casseroled (per 100g edible portion)

Analyte Description	Units	Raw shin separable lean	Cooked shin separable lean
Energy	kJ/100g	400	680
Moisture	g/100g	76.0	62.7
Protein (N x 6.25)	g/100g	21.9	33.8
Fat, total	g/100g	0.6	2.7
-Saturated	g/100g	0.3	1.0
-Mono-unsaturated	g/100g	0.3	1.1
-Poly-unsaturated	g/100g	<0.1	0.3
-Omega 3 poly-unsaturated	mg/100g	20	50
-Trans	mg/100g	10	50
Carbohydrate, total	g/100g	<0.5	<0.5
Cholesterol	mg/100g	56	91
Vitamins			
Vitamin A (Retinol)	µg/100g	<5	<5
Vitamin B1 (Thiamine)	mg/100g	0.03	0.04
Vitamin B2 (Riboflavin)	mg/100g	0.07	0.08
Vitamin B3 (Niacin)	mg/100g	4.9	-
Vitamin B5 (Pantothenate)	mg/100g	0.3	0.3
Vitamin B6 (Pyridoxine)	mg/100g	0.12	0.06
Vitamin B12 (Cobalamin)	µg/100g	1.3	1.9
Vitamin D activity*	µg/100g	3.2	<0.2
Vitamin E (Alpha Tocopherol)	mg/100g	<0.1	<0.1
Folates, total	µg/100g	<3	<3
Minerals			
Calcium	mg/100g	8	13
Iron	mg/100g	1.9	2.2
Magnesium	mg/100g	24	25
Phosphorus	mg/100g	190	200
Potassium	mg/100g	370	320
Selenium	µg/100g	8	12
Sodium	mg/100g	67	58
Zinc	mg/100g	4.9	7.5

Please note that some *values provided above may vary slightly in the NUTTAB publication*.
** Vitamin D activity = cholecalciferol plus (25-hydroxy cholecalciferol*5)*

As purchased, gravy beef and osso bucco contain a substantial amount of connective tissue but little separable fat. There was more separable fat in the osso bucco purchases, which may reflect difficulties in removing this when the bone is still present. Table 2 shows the edible portion and gross composition of the raw and cooked samples of gravy beef and osso bucco.

Table 2: Gross composition of shin beef (gravy beef, osso bucco), raw and casseroled

Component*	Gravy beef Raw	Osso bucco Raw	Gravy beef Casseroled	Osso bucco Casseroled
Separable lean %	87	64	76	47
Separable fat %	5	5	4	11
Connective tissue %	9	10	20	15
Bone %	0	21	0	27
Edible portion** %	92	69	80	58
Separable lean, proportion of edible %**	96	92	94	82

**Values in this table have been rounded to the nearest whole number after estimation*
***Separable lean plus separable fat*

Uses of the data by FSANZ

The results of this analysis will be incorporated into future releases of FSANZ's reference database NUTTAB and the Nutrition Panel Calculator. FSANZ may choose to apply this data in a number of ways, for example to produce aggregated nutrient data for casseroled beef, by applying existing data for the nutrient composition of separable fat.