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Survey of Mexican retail stores for US beef product ☆

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ABSTRACT

Retail packages (N = 1004) containing fresh US beef in display cases in five cities across three regions of Mexico were surveyed for cut types, cutting styles, fat thickness measurements, marbling scores, and USDA Quality Grades to gain an overview of fresh US beef in Mexican retail markets. Data were analyzed to generate frequency distributions and examine the effect of city, geographical region, store chain, and socio-economic status of the targeted clientele on type, cutting style, fat measures and quality of beef cuts of US origin. Top round, bottom round and knuckle were the most common cut types. Milanesa-type slice and "bistec" (steak for grilling) were the predominant cutting styles. Over 95% of the retail cuts were trimmed to 3.2 mm or less of external fat. Most cuts were USDA Select (74.5%) and USDA Choice (24.5%). External fat thickness and marbling score differed among cities and store chains ($P < 0.01$).

1. Introduction

Beef is the preferred red meat in Mexico (Gallardo-Nieto, Luna-Martínez, & Albarrán-Diaz, 2006). In 2012, per capita consumption of beef in Mexico was 15.8 kg (COMECARNE, 2012). Domestic beef production does not meet the demand, and in the period from 2006 to 2010, Mexico was the leading foreign export market in volume and value for US beef (USMEF, 2011). Supply has gradually shifted from grass- to grain-fed beef (Peel, Mathews & Johnson, 2011). Even in the current economic downturn, Mexican consumers, particularly from the upper-middle and higher-income strata, still purchase high-quality US beef to satisfy their beef consumption (USDA-FAS, 2009).

Consumer demand for beef depends on a range of features associated with a retail store and the products sold; including location, level of service, effective management, cleanliness, price, special labels (e.g., source verification and all-natural beef), official government quality grades, packaging material, and retail brands (Lusk & Cevallos, 2004; Ward, Lusk, & Dutton, 2008). Anderson, Kerr, Sanchez, and Ochoa (2002) observed a trend that Mexican consumers, particularly the middle class, have a growing preference for supermarkets as a retail distribution channel for beef as opposed to traditional wet markets. The importance of the Mexican Valley in this trend was highlighted given that Mexico City and its surrounding areas represent up to 40% of the Mexican demand for beef and 70% of the beef trade nationwide (Téllez-Delgado, Mora-Flores, Martínez-Damián, García-Mata, & García-Salazar, 2012).

Although a preference of Mexican consumers for lean beef is reported in several studies (Peel, Mathews, & Johnson, 2011; Rubio, Mendez, & Huerta-Leidenz, 2007), little attention has been paid to ascertain the leanness of the national retail beef supply. Huerta-Leidenz & Ledesma-Solano (2010) suggested that Mexican retailers have developed merchandising strategies for US beef based on the type of cut (subprimals and derived retail cuts), the retail cutting style (portion size and thickness) and the overall leanness (fat cover and marbling) of the meat cut to best align with the preferences of local consumers. Beef merchandising practices based on type of cut, retail cutting style and overall leanness likely vary with extrinsic factors, such as, geographical location, retailer/store chain and socio-demographics of its clientele. Unfortunately, no reports for the Mexican beef retail market were found in the literature describing these relationships. Association of type of beef cut with consumer purchasing decisions in Latin America has only been reported for beef merchandised in Argentina (Viola, Traversa, Pereyra, & Juan, 2004).

The objectives of this study were: a) to gain an overview of fresh US beef in display cases of retailers in the five Mexican cities where most of the beef imported from the US is sold, and b) to examine type, retail cutting style, leanness and USDA Quality Grade of beef cuts of US origin and

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determine variations by city, geographical region, store chain, and socio-economic status of the targeted clientele.

2. Materials and methods

2.1. Data collection

In order to develop the questionnaire, pilot surveys were conducted in grocery stores in Mexico City from January to April, 2008 (Huerta-Leidenz & Ledesma-Solano, 2010) to determine how the wholesale US beef cuts are handled, and the form in which these cuts are presented to the consumer. Trained USMEF personnel gathered additional information about physical characteristics, common retail cutting styles and traditional culinary preparation from June to August, 2010. Ground beef was not included as an option in the list of retail cutting styles because it was not possible to identify the origin of the ground product. Similarities between Mexican-style beef retail cuts and cuts specified by NAMP (2011) were determined using meat merchandising guides for local beef cuts published by local producer associations [Asociacion Mexicana de Engordadores de Ganado (AMEG) and Asociacion Nacional de Establecimientos Tipo Inspeccion Federal (ANETIF)] and experienced retail supervisors of the US Meat Export Federation (USMEF). Based on this survey, a standard of wholesale beef cuts and their retail cutting styles in the meat cases was obtained (Tables 1 and 2).

After completing the pilot work, a retail survey was conducted in grocery stores in five cities across Mexico from April 20 to August 15, 2008. During the surveying period, most Mexican grocery stores involved in the study population, except for two wholesale club-style stores under study, carried out two concurrent promotional and educational USMEF programs. The USMEF programs were titled: "Ideal Meat Case" and "Meat Case Contest". Following the USMEF training activities, 85% of the grocery stores under those USMEF marketing programs were randomly chosen for the survey population. It is important to note that retailers in Mexico maintain almost constant store layout and assortment of retail beef cuts and cutting styles in the meat cases throughout the year.

The three most economically important regions in Mexico were considered for this study (INEGI, 2012) as these regions represented the largest markets for imported US beef. According to the unpublished data from the Mexican National Association of Self-Service and Department Stores (ANTAD), the five cities surveyed within the three regions totalled 59.7% of total food store sales of ANTAD in 2012. Sampling was conducted such that the number (n) of observations (i.e., retail packages) collected was weighted based on the percent of the country's total population that each region comprised. The Central Region was represented by Mexico City in the Federal District and its surrounding area (n = 698) and Queretaro in Queretaro State (n = 37); the Midwestern Region by Leon, in Guanajuato State (n = 32) and Guadalajara, in Jalisco State (n = 68); and the Northeast Region by Monterrey City, in Nuevo Leon State (n = 169). Retailers included large, wholesale, club-style stores, traditional grocery stores and meat boutiques (small stores specializing in branded meats that included both generic and branded US beef). Store chains surveyed included Costco and SAM's (Mexico City, Guadalajara and Monterrey), Gigante/Soriana (Mexico City, Guadalajara, Monterrey, Queretaro, and Leon), Chedraui and Mega/Comercial Mexicana (Mexico City, Guadalajara, Queretaro and Leon), Superama (Mexico City), and HEB and Walmart (Monterrey). Three to seven store chains per city and an average of 6.6 grocery stores per chain were surveyed.

Data were collected in one visit by USMEF personnel to each grocery store between 10:00 and 16:00 h. All USMEF personnel had one to three years of experience in supervising US meat merchandising practices and/or personnel of the Mexican National Institute of Nutrition Salvador Zubirán (INNSZ). The surveyors who were posted in the five given cities visited the retailers of their respective territories to assess the type, origin, equivalent US name (NAMP, 2011), overall leanness and different retail cutting styles of beef retail cuts for sale. The surveyors were trained in-store by a meat scientist how to be able to:

- determine the cut type in the meat tray by its shape and anatomical indicators (muscle or bone, if present) and verify that it corresponds to that described in the tray's label,
- evaluate subcutaneous (external) and seam (intermuscular) fat thickness by using a metal probe. At least two measures were taken to obtain an average fat thickness which was then assigned a predetermined class (0 mm, 0.1–3.2 mm, 3.3–6.4 mm, 6.5–12.7 mm, or 12.8–19.1 mm),
- visually estimate marbling score in middle (rib and loin) and non-middle (e.g., round and chuck) cuts with use of the marbling photograph cards (Official USDA Marbling Photographs reprinted in 2007 by the USDA Livestock and Seed Program and the National Cattlemen's Beef Association) from 1 (practically devoid) to 6 (moderate),

Table 1
Commercial names, alternate names (in parentheses), US equivalent names and NAMP codes for wholesale beef cuts in Mexico City.

Primal cut		Subprimal cut		NAMP code[a]
Mexico	USA	Mexico	USA	
Chuleton (Espaldar)	Beef rib			103
		Ribeye	Ribeye	112A
Costillar (Aguja)	Beef plate			121
		Arrachera	Outside skirt	121C
		Falda (Aldilla)	Inside skirt	121D
		Costillas	Short plate	123A
Cuarto delantero (Paleta)	Beef Chuck			113
		Planchuela (Espaldilla)	Shoulder clod	114
		Diezmillo (Rollo de espaldilla)	Chuck roll	116A
		Juil	Chuck tender	116B
		Chambarete de mano	Fore shank	117
Pierna (Piña)	Beef round			158
		Bola (Pulpa bola)	Knuckle	167
		Pulpa negra (Centro or Cara)	Top (Inside) round	168
		Pulpa blanca (Pulpa larga or Contracara)	Bottom (Outside) round ("Flat")	171B
		Cuete	Eye of round	171C
		Talón del copete	Heel of round	171 F
Lomo	Beef loin			172
		Lomo de res	Strip loin (New York)	180
		Aguayón con tapa	Top sirloin butt	184
		Aguayón sin tapa (Palomilla sin empuje)	Top Sirloin center cut	184B

[a] North American Meat Processors Association (NAMP, 2011).