Nutrient Content of Luncheon Meats with Emphasis on Sodium

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Abstract: According to a recent CDC report, 44% of U.S. sodium intake comes from 10 common food categories, one of them being cold cuts/cured meats. Research was conducted by scientists at USDA and Texas Tech University with the purpose of determining and comparing current nutrient values in luncheon meats including bacon to those previously reported (2002-2007), and determining the effect of cooking on sodium content of regular and low sodium bacon. Retail packages of three assorted brands of sliced ham, turkey breast, chicken deli meat, beef bologna, salami, regular/low sodium bacon and pre-cooked bacon, were purchased from 12 retail outlets using a nationwide sampling plan developed for USDA's National Food and Nutrient Analysis Program. Nutrient values for proximates and minerals were determined by commercial laboratories and cholesterol by TTU using validated methodology. Quality control was assured through the use of standard reference materials and in-house control materials. Results indicated that the sodium content of turkey breast, chicken and beef bologna were lower than previously reported, while ham and salami were higher. There was little change in total fat, cholesterol, potassium, phosphorus, and iron content in all luncheon meats. Our study confirms the label values indicating that low sodium bacon contains 25% less sodium than regular bacon. These data will be used to update nutrient information in the National Nutrient Database for Standard Reference (SR) which provides current and accurate data used by researchers, dietitians, government agencies for nutrition assessment and monitoring. Data are available at www.ars.usda.gov/nutrientdata.

Introduction

Excessive dietary sodium consumption increases blood pressure, which increases the risk for stroke, coronary heart disease, heart failure, and renal disease.[1] According to a recent CDC report on vital signs, 44% of sodium consumed came from 10 common food categories which included cold cuts/cured meats. Cold cuts may also be known as luncheon meats, sandwich meats, sliced meats or deli meats. A collaborative effort is being conducted by scientists at USDA and Texas Tech University (TTU) to monitor sodium content of bacon and popular cold cuts. Furthermore, sodium content in these products will be compared to those previously reported in (2002-2007). The effect of cooking on the sodium content of regular and low sodium bacon will also be examined.

Objective

•To determine sodium content of bacon products and popular ready-to-eat cold cuts (sliced ham, turkey breast, chicken breast, beef bologna and hard salami) available in the retail market.

•To compare current sodium values to previously reported data (2002-2007).

•To determine the effect of two cooking methods on the sodium content of regular and low sodium bacon.

•To update the sodium content and other nutrients for luncheon meats and bacon products in the National Nutrient Database for Standard Reference.

Methodology

Sampling: Retail packages of three brands of ready-to-eat (RTE) luncheon meats were purchased from 12 retail outlets using a nationwide sampling plan developed for USDA's National Food and Nutrient Analysis Program (NFNAP)[2]. Regular (n=18), and low sodium bacon (n=6) and pre-cooked bacon (n=6) were also sampled using the NFNAP sampling plan.
Preparation: Regular and low sodium bacon were prepared using two methods (microwaved and pan-fried) as directed on the label.
Analyses: Proximates (ash, moisture, nitrogen, fat and selected nutrients) were determined by a commercial laboratory using standard AOAC methodology[3]; minerals were analyzed by ICP methodology[3].
Quality control : Quality assurance was monitored through the use of standard reference materials (SRM), in-house control materials and random duplicate sampling.
Statistics: Data were evaluated using the two factor Analysis of Variance procedure and the Mann Whitney U test[4]. Critical value was set at p<0.05.

Fig 1. Changes in sodium levels in meats between 2011 and 2002-2007

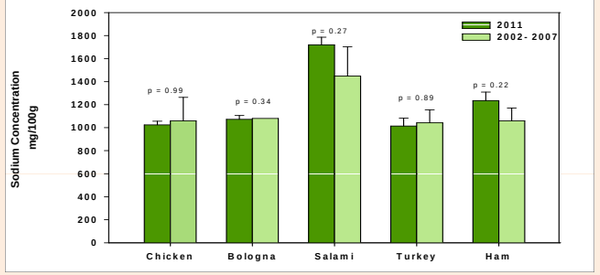

Fig 2. Sodium content of unprepared regular and low -sodium bacon by preparation method

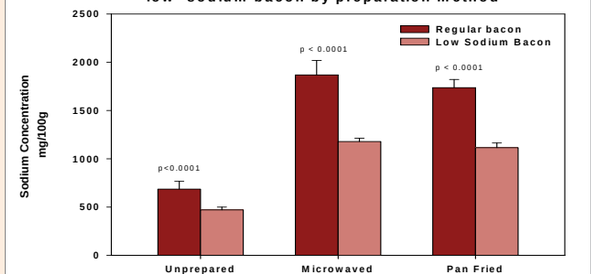

Table 1: Nutrient Composition ± SEM of luncheon meats and pre-cooked bacon reported in 2011

Meats	N	Total Fat	Protein	Moisture	Cholesterol	Sodium	Potassium	Phosphorous	Calcium	Iron
		(g/100 g)			(mg/100 g)					
Ham	11	3.61 ±0.36	16.46 ±0.2	75.14 ±0.17	40.78	1235.9 ±73.5	638.36 ±81.9	262.55 ±5.14	4.93 ±0.08	0.56 ±0.01
Turkey Breast	12	2.15 ±0.03	16.30 ±0.05	75.72 ±0.07	49.86	1013.3 ±69.2	496.5 ±6.07	236.08 ±1.37	8.59 ±0.4	0.34 ±0.009
Chicken Breast	11	1.75 ±0.027	17.40 ±0.08	74.55 ±0.05	51.15 ±0.374	1024.5 ±31.3	359.00 ±3.29	257.56 ±0.859	10.30 ±0.24	0.37 ±0.01
Beef Bologna	11	27.54 ±0.026	10.78 ±0.01	54.53 ±0.03	57.17 ±0.29	1073.0 ±32.5	176.50 ±2.18	154.22 ±0.47	21.04 ±0.26	1.28
Hard Salami (beef and pork)	12	30.94 ±0.11	20.30 ±0.05	42.18 ±0.09	107.87 ±0.43	1720.0 ±65.6	334.26 ±0.89	186.15 ±0.42	28.07 ±0.02	1.35
Bacon, precooked	6	33.87 ±0.62	36.90 ±0.25	22.08 ±0.57	112.16 ±1.89	1623.3 ±44.4	481.83 ±4.68	362.83 ±26.3	10.41 ±0.28	0.99 ±0.01

Results

• There was no significant change in sodium levels in these sampled meat products between 2002-2007 and 2011(Fig 1).

• The interaction between preparation method and sodium levels for regular and low sodium bacon was statistically significant at (p<0.0001). Microwaving showed a greater significance in sodium concentration than pan-frying (p<0.0001) (Fig 2).

•Beef bologna, hard salami and pre-cooked bacon had higher total fat levels than ham and turkey breast. Hard salami and pre-cooked bacon were generally higher in nutrient content than other meats (Table 1).

Discussion

• Sodium content has not increased in these luncheon meats over the last decade.

•These data for regular and low sodium bacon confirm the label values indicating that low sodium bacon contains 30% less sodium than regular bacon.

•The higher nutrient concentration in protein, fat, cholesterol and sodium in hard salami and pre-cooked bacon may be reflective of the lower moisture content in these products.

•These data will be used to update nutrient information in the National Nutrient Database Standard Reference (SR) which will provide current and accurate data used by researchers, dietitians, government agencies for nutrition assessment and monitoring.

References

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