

Breakfast in the Fast Lane

Janice Powers, MEd, RD, CSR

FOR A MORNING meal that fits in your hands, fuels your day, and gets you going with little time, consider a breakfast sandwich. Breakfast sandwiches meet the needs of the American lifestyle: the desire to eat breakfast and being too busy to prepare it. Long before the fast-food restaurants became part of the American landscape, breakfast sandwiches were part of early morning routines. No matter where it came from, the breakfast sandwich is here to stay.

The breakfast sandwich story begins in the early 19th century, in London, explains breakfast historian Heather Arndt-Anderson.¹ Street vendors served them to factory workers heading to work. Classic breakfast foods—a fried egg, meat, sometimes cheese—were put on a soft roll called a “bap.” They proved popular and profitable. It did not take long for the breakfast sandwich to cross the Atlantic to become a staple of the American working class.

Food writer James Beard traces the American version of the breakfast sandwich to Chinese chefs at railroad and logging camps, who adapted it from the traditional Egg Foo Yung. Pioneers associated with the Westward expansion ate an American variation called the “Denver sandwich”: an omelet filled with diced ham, onion, and green pepper folded between 2 slices of white bread.

After the Second World War, American culture veered toward the casual and convenient. The 1950s and 1960s saw the rise of instant coffee, Pop-Tarts, and Carnation Instant Breakfast, as well as 7-11 that catered to an on-the-go morning crowd. In the early 1970s, the California-based chain Jack in the Box debuted the first modern to-go breakfast sandwich: egg, meat, and cheese on an English muffin.¹ A year later, McDonald’s began offering a similar sandwich, named the Egg McMuffin.

To attract and keep customers, many fast-food chains have revamped their early morning menus. McDonald’s has reached out to customers who for years have asked

the company to sell breakfast items past the traditional 10:30 AM cutoff. Although this creates new costs and complexities, the challenges of cooking Egg McMuffins alongside Big Macs could help McDonald’s franchisees boost sales. McDonald’s launched all-day breakfast on October 6, 2015.² The availability of the all-day breakfast menu in the United States resulted in a 5.7% rise in sales for the final quarter of 2015.³

Offering breakfast menu items all day is not new. Dine in restaurants, such as International House of Pancakes, Cracker Barrel, and Denny’s, have built their business with it. McDonald’s may be the newest to join the all-day breakfast restaurants; they are not the first. Jack in the Box, Sonic, and BoJangles have been offering all-day breakfast items for years.

The anatomy of a breakfast sandwich consists of a combination of egg, meat, cheese, and bread. English muffins were used as the carrier in the first modern day breakfast sandwich. Bagels, biscuits, tortillas, Texas toast, flatbread, croissants, pancakes, and waffles have all found their place in the sandwiches.

Breakfast sandwiches are found in the frozen food department of local markets (Table 1) and the grab and go section of many convenience stores. They can be purchased at most fast-food chains (Table 2) and many coffee shops.

Breakfast sandwiches can be prepared at home. Table 3 summarizes nutrient values of standard ingredients that are combined to make a homemade version of a breakfast sandwich. Made from ingredients found in the grocery store aisles, the homemade sandwich is similar in size to the fast-food versions. This sandwich provides potassium and phosphorus values, not available for the frozen and fast-food products.

Breakfast Sandwich Considerations

Bigger, Not Better

Size matters in this market. Larger sandwiches (by weight) provide higher protein content at the expense of high sodium and presumed higher potassium and phosphorus content. The newest breakfast beast is named the Hardee’s Monster Biscuit. The sandwich is stacked with 3 types of processed pork and a day’s worth of sodium. McDonald’s also offers a choice between a classic and a large biscuit. Frozen sandwiches are about 30% smaller than similar sandwiches sold at fast-food restaurants.

Nutrition and Food Service, Department of Veterans Affairs Medical Center, Hampton, Virginia

Address correspondence to Janice Powers, MEd, RD, CSR, Nutrition and Food Service, Department of Veterans Affairs Medical Center, 100 Emancipation Drive, Hampton, Virginia 23667. E-mail: janice.powers@va.gov.

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Table 1. Frozen Breakfast Sandwiches

Product	Size (g)	Protein (g)	Fat (g)	Sodium (mg)	Potassium (mg)	Phosphorus (mg)	Calories	Ingredients (Phosphorus Additives)
Aunt Jemima Sausage Egg & Cheese Croissant*	N/A	13	23	680	N/A	N/A	350	Croissant; Sausage patty (sodium phosphate); Cooked egg patty; Pasteurized process cheddar cheese.
Aunt Jemima Sausage, Egg and Cheese on Biscuit*	114	12	21	830	N/A	N/A	340	Biscuit (sodium aluminum phosphate); Sausage patty (sodium phosphate); Cooked egg patty; Pasteurized process cheddar cheese.
Kellogg's Eggo Sausage, Egg and Cheese Breakfast Sandwich†	98	10	17	510	105	N/A	290	Waffle style bread (whole wheat); Fully cooked pork sausage patty; Scrambled egg patty (dicalcium phosphate); Pasteurized process cheese (sodium phosphates).
Kellogg's Eggo Bacon, Egg and Cheese Breakfast Sandwich†	77	9	10	550	150	N/A	210	Waffle style bread (whole wheat); Scrambled egg patty (dicalcium phosphate); Fully cooked bacon (sodium phosphate) Pasteurized process cheese (sodium phosphates).
Kellogg's Eggo Ham, Egg and Cheese Breakfast Sandwich†	88	10	8	610	105	N/A	210	Whole wheat waffle style bread; Scrambled egg patty (dicalcium phosphate); Fully cooked ham water added chunked and formed (sodium phosphate); Pasteurized process cheese (sodium phosphates).
Jimmy Dean Delights Applewood Smoke Chicken Sausage, Egg Whites & Cheese Muffin‡	145	17	8	490	170	N/A	250	English Muffin (sodium acid pyrophosphate, baking powder; monocalcium phosphate); Fried Egg Patty; Applewood Smoke Chicken Sausage (sodium phosphate); Pasteurized Process American Cheese (sodium pyrophosphate, sodium phosphate).
Jimmy Dean Delights Turkey Sausage, Egg White & Cheese Whole Grain Bagel‡	136	18	8	670	N/A	N/A	270	Whole wheat bagel (monocalcium phosphate); Fried Egg White Patty; Cooked Turkey Sausage Patty (sodium phosphate); Pasteurized Process American Cheese (sodium pyrophosphate, sodium phosphate).
Jimmy Dean Delights Turkey Sausage, Egg & Cheese Honey Wheat Flatbread‡	116	15	12	540	N/A	N/A	250	Honey Wheat Flatbread; Egg Patty; Fully Cooked Turkey Sausage Patty (sodium phosphate); Pasteurized Process American Cheese (sodium pyrophosphate, sodium phosphate).
Jimmy Dean Sausage, Egg and Cheese Croissant‡	128	12	28	580	290	N/A	410	Croissant; Cooked Sausage Patty (sodium phosphate); Grilled Egg; Pasteurized Process American Cheese (sodium pyrophosphate, sodium phosphate).
Jimmy Dean Sausage, Egg and Cheese Biscuit‡	128	12	29	750	374	387	420	Biscuit (sodium aluminum pyrophosphate); Cooked Sausage Patty (sodium phosphate); Grilled Egg; Pasteurized Process American Cheese (sodium pyrophosphate, sodium phosphate).

Jimmy Dean Sausage, Egg and Cheese Muffin†	130	13	21	700	290	N/A	350	English muffin; Cooked Sausage Patty (sodium phosphate); Grilled Egg; Pasteurized Process American Cheese (sodium pyrophosphate, sodium phosphate).
Jimmy Dean Southern Style Chicken Biscuit‡	113	13	12	680	160	N/A	280	Biscuit (sodium aluminum pyrophosphate); Breaded Chicken Breast (sodium aluminum pyrophosphate).
Special K Sausage, Egg and Cheese Flatbread§	116	14	12	700	200	N/A	220	Scrambled egg patty (dicalcium phosphate); Multigrain flatbread; Sausage patty; Pasteurized process white cheddar cheese product (sodium phosphates); Cheddar cheese (sodium phosphate).
Special K Bacon, Egg and Cheese Flatbread§	95	12	10	630	200	N/A	200	Egg patty with bacon (sodium phosphates); Bagel thin; Pasteurized process cheddar cheese (sodium phosphates).

*www.auntjemims.com.
 †www.leggomyeppo.com.
 ‡www.jimmydean.com.
 §www.specialk.com.

Protein Pitch

Breakfast sandwiches provide protein but are based on processed meat, pasteurized processed cheese, and pasteurized eggs (that strangely folded egg patty or omelet). Whole eggs are broken and cooked for McDonald’s Egg McMuffin. Dunkin Donuts and Hardee’s have also been chosen to cook whole eggs. Ordering a “round egg” at McDonald’s provides customers with a cooked whole egg instead of an egg patty. For persons receiving dialysis treatments, the breakfast sandwich may serve as a source of protein before or after a dialysis treatment.

Sodium, Not So Much

Processed meats (ham, sausage, and bacon) and cheeses, can add significant amounts of sodium to the portable treat. Breads should not be overlooked as a contributor of sodium. The American Heart Association has placed bread in the lineup of its “salty six” infographic.⁴ A few frozen sandwiches manage to deliver less than 600 mg of sodium. Choosing English muffins, croissants, and sandwich buns as the carrier instead of biscuits, pancakes, bagels, flatbread, and Texas toast can save on the sodium. Requesting a fast-food sandwich without cheese could lower the sodium content of most choices by about 200 mg.

Potassium Point

Potassium content is not available for all sandwiches. The homemade reference sandwich suggests about 300-mg potassium per sandwich. Reviews of ingredient lists show that some have potassium compounds used as preservatives. The Dunkin Donuts egg white veggie patty includes shredded potatoes.

Phosphorus Failings

Abnormal processing of minerals (calcium, phosphorus, magnesium) by the kidney is common in chronic kidney disease (CKD) Stages 3-5D.⁵ Kidney Disease: Improving Global Outcomes (KDIGO) suggests limiting dietary phosphorus intake alone or in combination with other treatments to correct or avoid hyperphosphatemia.⁶ Primary sources of organic phosphorus include meat, fish, eggs, dairy products, beans, and nuts. Persons who rely on processed and fast foods may acquire unknown amounts of inorganic phosphorus from phosphate-containing food additives. Phosphorus additives are included in ingredient lists but the quantity of phosphorus is not included on food labels. Dietitians and patients are faced with the challenge of accessing accurate phosphorus content information.⁷

Breakfast sandwiches are part of the grab-and-go meals that take very little time to prepare. A brief review of ingredient lists reveals that products may contain multiple

Table 2. Fast-Food Breakfast Sandwiches

Product	Size (g)	Protein (g)	Fat (g)	Sodium (mg)	Potassium (mg)	Phosphorus (mg)	Calories	Ingredients (Phosphorus Additives)
Burger King Croissan'wich Sausage; Egg and Cheese*	165	19	33	930	N/A	N/A	500	Sausage; Egg Patty; Croissant; American cheese (sodium phosphate).
Burger King Croissan'wich Egg and Cheese*	155	17	20	1080	N/A	N/A	390	Ham (sodium phosphate); Egg Patty; Croissant; American cheese (sodium phosphate).
Dunkin Donuts Egg White Flatbread†	N/A	17	13	610	N/A	N/A	320	Multigrain flatbread; Egg white Veggie Patty; shredded potatoes; Swiss Cheese blend (sodium phosphate); Sliced White Cheddar Cheese.
Dunkin Donuts Bacon Egg and Cheese on Bagel†	N/A	23	12	1140	N/A	N/A	470	Plain Bagel; Fried Egg; American cheese (sodium phosphate); Bacon (sodium phosphate).
Dunkin Donuts Big N' Toasted†	N/A	27	31	1290	N/A	N/A	280	Fried Egg; Grilled Toast (monocalcium phosphate; calcium phosphate); Bacon (sodium phosphate); American cheese (sodium phosphate).
Hardee's Sausage and Egg Biscuit‡	163	17	37	1230	N/A	N/A	560	Biscuit (monocalcium phosphate; sodium aluminum phosphate) Sausage Patty; Whole Eggs.
Hardee's Chicken Fillet Biscuit‡	173	20	32	1330	N/A	N/A	550	Biscuit (monocalcium phosphate; sodium aluminum phosphate) Chicken Breakfast Fillet (sodium phosphates; sodium aluminum phosphate; monocalcium phosphate).
Hardee's Frisco Breakfast Sandwich‡	189	24	19	1570	N/A	N/A	450	Bread, Sourdough; Whole Eggs Swiss Cheese (sodium phosphate); American cheese (sodium phosphate); Ham slice (sodium phosphate).
Hardee's Monster Biscuit‡	237	34	50	2320	N/A	N/A	750	Biscuit; (monocalcium phosphate, sodium aluminum phosphate) Sausage Patty; Whole Eggs; Bacon (sodium phosphate); American cheese (sodium phosphate); Ham slice (sodium phosphate).
McDonald's Egg White Delight§	132	17	8	740	N/A	N/A	250	English muffin (monocalcium phosphate, tricalcium phosphate, dicalcium phosphate); Egg whites; Canadian Bacon (sodium phosphate); Pasteurized process white cheddar cheese (may contain one or more of the following: sodium phosphate, sodium pyrophosphate, sodium hexametaphosphate); Salted butter.
McDonald's Egg McMuffin§	126	17	12	780	N/A	N/A	290	English muffin (monocalcium phosphate, tricalcium phosphate); Egg; Canadian bacon (dicalcium phosphate, sodium phosphate, sodium pyrophosphate); Pasteurized Process American cheese (sodium phosphate, sodium pyrophosphate); Salted butter.

McDonald's Sausage McMuffin with Egg [§]	165	21	29	945	N/A	N/A	450	English muffin (monocalcium phosphate, tricalcium phosphate); Egg; Sausage Patty; Pasteurized Process American cheese (sodium phosphate, sodium pyrophosphate); Salted butter.
McDonald's Bacon Egg and Cheese Biscuit [§]	147	19	26	1260	N/A	N/A	450	Biscuit, regular (sodium aluminum phosphate, monocalcium phosphate); Folded egg (sodium acid pyrophosphate); Pasteurized Process American cheese (sodium phosphate, sodium pyrophosphate); Thick Cut Applewood Smoked Bacon (sodium phosphate); Salted Butter.
McDonald's Sausage Biscuit with Egg [§]	164	17	35	1080	N/A	N/A	520	Biscuit, regular (sodium aluminum phosphate, monocalcium phosphate); Sausage patty; Folded egg (sodium acid pyrophosphate); Salted butter.
McDonald's Sausage McGriddle [§]	144	11	25	990	N/A	N/A	440	Griddle cakes (calcium acid pyrophosphate, monocalcium phosphate); Sausage patty.
McDonald's Sausage Burrito [§]	111	12	16	790	N/A	N/A	300	Flour tortilla (leavening may contain one or more of: baking soda, sodium aluminum sulfate, corn starch, sodium acid pyrophosphate, calcium sulfate, monocalcium phosphate); Sausage and scrambled egg mix; Pasteurized process American cheese (sodium phosphate, sodium pyrophosphate).
Sonic Sausage Breakfast Burrito	189	24	29	1480	N/A	N/A	500	N/A
Sonic Sausage Breakfast Sandwich	207	27	39	1500	N/A	N/A	600	N/A
Subway Bacon, Egg and Cheese 6" Sub [¶]	189	25	17	1290	N/A	N/A	440	9 grain wheat bread; American cheese (tetrasodium pyrophosphate); Bacon (sodium phosphates); Egg Omelet Patty.
Subway Bacon, Egg and Cheese Flatbread [¶]	108	12	12	740	N/A	N/A	240	Flatbread (sodium acid pyrophosphate (sodium acid pyrophosphate); American cheese (tetrasodium pyrophosphate); Bacon (sodium phosphates); Egg Omelet Patty.
Subway Egg White and Cheese Sub [¶]	174	19	8	910	N/A	N/A	320	9 grain wheat bread; American cheese (tetrasodium pyrophosphate); Bacon (sodium phosphates); Egg White Omelet Patty (dicalcium phosphate).

*www.bk.com.

†www.dunkindonuts.com.

‡www.hardees.com.

§www.mcdonalds.com.

||www.sonicdrivein.com.

¶www.subway.com.

Table 3. Breakfast Sandwich Individual Ingredients

Food	Size (g)	Protein (g)	Fat (g)	Sodium (mg)	Phosphorus (mg)	Potassium (mg)	Calories
English muffin*	57	4	1	200	61	106	127
Pasteurized processed American cheese slice*	21	4	6.5	220	135	28	70
Egg*	50	6	5	70	98	69	72
Sausage patty*	27	5	7	220	40	92	88
Homemade sandwich total	155	19	19.5	710	334	295	357
Bread options							
Bagel, 3"*	69	7	1	291	68	74	180
Biscuit, medium*	51	3	6	480	220	115	172
Croissant, small*	42	3	9	196	44	50	170
Flatbread*	57	5	4.5	320	73	65	142
Pancakes, 2, 4 inch*	80	4	5.5	369	172	72	186
Texas toast, 2 inch†	80	7	3	395	78	101	213
White bread, 2 inch*	58	5	2	284	57	73	154

*www.fooducate.com.

†www.ndb.nal.usda.gov.

phosphorus additives due to dependence on baked goods, processed meats, cheeses, and egg products. See [Tables 1 and 2](#). Whole eggs offered with some products may provide a lower phosphorus option. English muffins, bagels, flatbreads, and croissants contribute less phosphorus to sandwiches. Selecting a cheese-free option may deliver less phosphorus.

Take Heart

Eager to meet customer demands, healthier options are being provided by fast-food restaurants. Sandwich breads, flatbreads, bagels, and English muffins have a healthier fat profile than biscuits, croissants, and pancakes. Egg whites, chicken, and turkey sausages have been used to replace whole eggs/egg patties and red meat in an attempt to “clean” up the heart-breaking delivery of nutrients. The sodium content of most sandwiches makes it difficult to maintain a daily intake of less than 2000 mg. Chicken fillets are usually fried and served with a biscuit and do not provide heart-healthy options for breakfast. Egg whites are showing a presence in breakfast sandwiches, but not all are real egg whites. Some of the “egg whites” have ingredient lists 15 items long.⁸

“Which Picks?”

The desire for easy meal solutions includes persons on dialysis and those with CKD. Patients may select breakfast sandwiches as they rush to get to their dialysis appointment or feel too tired to cook after treatment. Dialysis patients may hear the pleas of the renal dietitian to eat protein before and after treatment. The breakfast sandwich may be chosen as a way to fill up fast. Frozen food development and the all-day breakfast menu increase breakfast sandwich availability.

Does a kidney-friendly choice exist among the many options available in the breakfast sandwich lineup? The main concern is that breakfast sandwiches are convenience foods made with convenience ingredients. Even the homemade version relies on convenience and processed ingredients. The person with CKD/end-stage renal disease has options when choosing a breakfast sandwich but should not forget to take phosphorus binders. The renal dietitian can guide persons with end-stage renal disease and CKD who are seeking a quick breakfast.

Frozen-Select from the Jimmy Dean Delights Applewood Smoke Chicken Sausage, Egg Whites & Cheese Muffin or Kellogg’s Eggo Sausage, Egg and Cheese Breakfast Sandwich for a modest sodium load. The cheese can be removed before heating. Without processed cheese, the protein, sodium, and phosphorus contents are lower.

Fast Food-Select from McDonald’s Egg McMuffin, Subway Bacon, Egg and Cheese Flatbread, or Dunkin Donuts Egg White Flatbread with a modest sodium load. Requesting the sandwich without cheese would result in a sandwich with a lower protein, sodium, and phosphorus content.

References

1. Kaplan S. *The Long and Surprising History of the Egg and Whatever Sandwich*. Portland, ME: Portland Press Herald. Available at: <http://www.pressherald.com/2015/10/06/long-surprising-history-egg-whatever-sandwich/>. Accessed December 28, 2015.
2. Jargon J. McDonald’s set to offer all day breakfast. *Wall Street J*. Available at: <http://www.wsj.com/articles/mcdonalds-set-to-offer-all-day-breakfast-1441134058>. Accessed December 28, 2016.
3. The Associated Press. *Breakfast Bump: McDonald’s US Sales Jump 5.7 Percent*. New York, NY: The New York Times. Available at: <http://www.nytimes.com/>

aponline/2016/01/25/business/ap-us-mcdonalds-results.html?_r=0. Accessed January 26, 2016.

4. American Heart Association. The Salty Six. Available at: <http://www.heart.org>. Accessed December 28, 2015.

5. National Kidney Foundation. K/DOQI clinical practice guidelines for chronic kidney disease: evaluation, classification and stratification. *Am J Kidney Dis.* 2002;39:S1-S266.

6. Kidney Disease Improving Global Outcomes (KDIGO) CKD-MBD Work Group. KDIGO clinical practice guidelines for the diagnosis, evalua-

tion, prevention and treatment of chronic kidney disease mineral and bone disorder (CKD-MBD). *Kidney Int.* 2009;76(Suppl 113):S1-S130.

7. Kalantar-Zadeh K, Gutekunst L, Mehrotra R, et al. Understanding sources of dietary phosphorus in the treatment of patients with chronic kidney disease. *Clin J Am Soc Nephrol.* 2010;5:519-530.

8. Melnick M. *What's in Your Egg-White Sandwich May Scare You.* New York, NY: The Huffington Post. Available at: http://www.huffingtonpost.com/2013/07/18/egg-white-breakfast-sandwiches_n_3612751.html. Accessed February 19, 2016.