UF Researchers Create Low-Carb Tortilla

A new low-carbohydrate, high-protein food product created by University of Florida researchers could give dieters a new weapon in the battle against obesity.

It's the "flaquita," an all-meat tortilla that promises to squeeze the last few carbohydrates out of the low-carb wraps now offered at many restaurants.

"I think we came up with this at just the right time," said Michael Madden, a recent graduate in food science and human nutrition from UF's Institute of Food and Agricultural Sciences. "With so many people on the Atkins and South Beach diets, there's a big demand for low-carb wraps right now."

Made of protein extracted from chicken, the flaquita isn't just a piece of meat to wrap around lettuce, tomatoes and other sandwich fixings. It looks and feels much like a flour-based tortilla, but with only a fraction of the carbohydrates found in most tortillas. A single flaquita contains only 2.6 grams of carbohydrates compared to about 11 grams for a corn tortilla or 22 grams for a flour tortilla, the flaquita's inventors say.

Maricel Amador

Food biochemist Hordur Kristinsson, left, and recent UF graduate Lauren O'Kelley prepare and taste low-carbohydrate, high-protein tortillas a team of students led by Kristinsson created out of chicken protein.

The name of the new tortilla is derived from the Spanish word "flaco," which means "thin," although they point out that the flaquita isn't limited to use in Latin foods.

Madden and two other recent graduates of UF's food science and human nutrition program, Meghan Meller and Lauren O'Kelley, came up with the idea while studying under Hordur Kristinsson, an assistant professor of food biochemistry at UF who specializes in problems related to the seafood industry.

In the late 1990s, Kristinsson and researchers at the University of Massachusetts Amherst began looking for ways to salvage the parts left over when fish are filleted in processing plants. Those leftovers — fins and bones with meat still attached — are sometimes sold for use in cat food, animal feed or fertilizer. But because they fetch such a low price, Kristinsson says, the leftovers often wind up in landfills or are dumped at sea.

"The original work on this technology was inspired by environmental concerns," Kristinsson said. "We wanted to turn this material into something that had a lot more value, to find a use for things that otherwise might be thrown away."

Kristinsson and his colleagues found that by grinding up the fish parts, suspending them in a basic solution and spinning them in a centrifuge, they could separate protein from the other compounds in the fish.

It may not sound like a pretty process, but the end result is a mild-tasting, bland-looking white paste composed almost entirely of pure protein. Because it can be mixed with other substances and easily picks up their flavor, Kristinsson says the protein can be used in a wide variety of products, such as imitation crab meat or artificial scallops, or injected into fish fillets to improve their flavor and texture.

Kritinsson and his colleagues found that the process produced similar results in chicken and other kinds of meat, creating a paste of almost-pure protein from fatty scraps that would otherwise be discarded.

Kristinsson's students wanted to take his research a step further and aimed to create a consumer product designed specifically to put the extracted protein to use.

Taking a cue from the growing low-carb diet craze, the students decided to use the protein in a product normally made of carbohydrate-rich food. The end result is a nearly carb-free sandwich wrap that looks and acts like a flour tortilla, but tastes ever so slightly like chicken.

"I think flaquitas have a great prospect as a commercial product since they are processed from proteins that are extracted from very inexpensive secondary raw material from poultry processing," Kirstinsson said. "We are creating a unique high-value product from low-value raw materials using this novel technique that could greatly benefit the poultry, fish and meat industry."

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