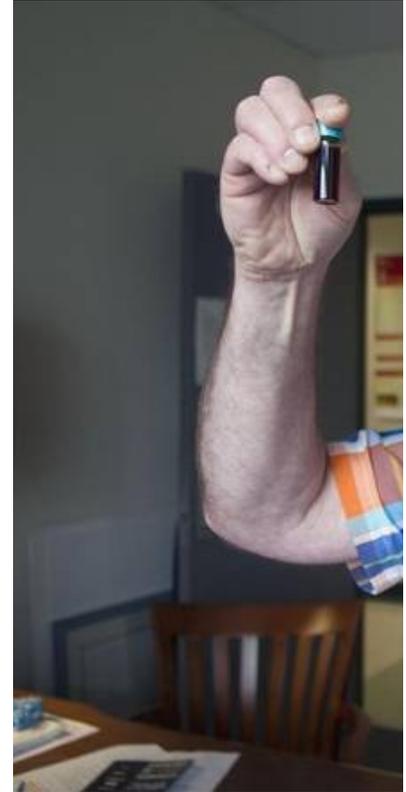


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Holy guacamole: Food-coloring startup gives avocado pits new life



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UNIVERSITY PARK — When Greg Ziegler was helping his son decide on a science fair project, Ziegler, a professor of food science at Penn State, didn't consult the tea leaves for guidance. Instead, he found the answer — and the idea for his future company — while making guacamole.

“I said ‘why don't we extract this starch from the seed?’ ” Ziegler said. “And when we went ahead to look at the starch, we got this brilliant orange color that developed.”

Their code orange was vexing at first, a harmless lab accident in Ziegler's kitchen. But as with many other inventions, one man's avocado pit was another's golden idea. Or in Ziegler's case, red, yellow and orange.

“After a little while I started to say maybe this orange is starting to tell me something,” Ziegler said. “Maybe I should forget about the starch and look at the orange — and that’s what we ended up doing.”

Ziegler and his team have discovered how to capture unlikely colors — blood reds to Tang-like oranges — from avocado seeds, using a process that’s part science-part miracle of nature. Many fruits and vegetables carry an enzyme called polyphenol oxidase besides polyphenols, and when exposed to air, they begin to turn brown due to enzymatic reactions. Apples, for instance, with their high concentration of polyphenols, brown up shortly after a bite is taken.

But while avocado flesh reacts similarly, it’s what’s inside that matters. Because of unique substrates in their seeds, the reactions produce a radiant orange color instead of browns or blacks. A few tweaks to pH and concentration can result in different hues.

The idea has grown into a full-fledged business, called Persea Naturals after the genus name of avocados, and has already earned funding through a university research grant and the school’s Fund for Innovation.

The company’s brand, called AvoColor, has already tested the stable, water-soluble coloring in soda, ice cream and gummy bears. They’ve also tried it in cakes — frosting and crumbs included.

“One of the challenges with natural pigments right now is they’re not very stable,” Ziegler said. “No. 2, in the color spectrum, a lot of them are oil soluble, so to use them in soda or something, they have to be used in an emulsified form.”

The difference, Ziegler said, lies in price and convenience. With other food-coloring sources, additional ingredients are needed. Some can’t take the heat.

“You can take colors from beet, for example, and make a red,” Ziegler said. “But it’s not very heat stable, so if you try to put it in a product that needs to be heated, baked or pasteurized, it’s not as stable.”

AvoColor’s food-coloring also matches up well with carotenoids, pigments in the same spectrum of autumnal colors. Whereas carotenoids require emulsifiers or are found in non-waste products, AvoColor’s coloring comes from the part that’s tossed.

“We think there’ll be a price advantage because a lot of these other products are extracted from materials that already have some value in marketplace like paprika, or turmeric or saffron,” Ziegler said. “So almost all the current alternatives are extracted from materials that have inherent value themselves, and here we are extracting this from something that right now, doesn’t have any other value to it.”

The startup comes at a time when natural ingredients are usurping more of the plate from their artificial cousins. Major brands such as Hershey, Nestlé and Whole Foods have swapped out synthetics for naturals in response to consumer demand. Items with “natural” on their labels connote safer, healthier products, experts say, in the eyes of consumers. But whether that thinking is specious or not, Ziegler said, is less clear.

“Being food scientists here, we actually don’t feel that synthetics are harmful at all,” he said. “But consumers perceive them that way, so we have a product that can fulfill this consumer desire.”

America’s hunger for avocados, meanwhile, has grown in recent years. In 2012, the United States consumed more than 815,000 metric tons of the green fruit — or about a fifth of global consumption, according to the United States Agency for International Development.

The rising popularity of fast-casual chains like Chipotle, where guacamole is a staple, has also coincided with the growing appetite for avocados. For a brand like AvoColor, the timing couldn’t be better.

“If you’ve noticed the buses driving around town promoting (fast-casual chain) Moe’s Southwest Grill, places like that are now processing a lot more avocados rather than selling them whole,” Ziegler said. “In fact, when we first started making some of this public, it was avocado growers and processors who were making the first phone calls because they saw some value in diverting these things from the landfill.

“We’re in the position where they’ll say ‘I got the truck filled up, where do I send it?’ ”

According to Bob Hicks, the company’s CEO, it’s no joke. The team has received calls asking for how many tons it can take on.

“They are being disposed of in extremely large numbers because there’s no other value for the seed,” he said.

Others have seen the same promise in the company’s future. Earlier in October, the team took home \$50,000 for placing second in a university competition for startups.

The next steps involve getting FDA approval, a potentially two-year or longer process, and finding corporate partners. Hicks said the team is targeting food color companies, who can then market to the food companies themselves.

“The question is what is our window of opportunity within the market?” he said. “So we just need people to eat more guacamole.”

Or in Ziegler’s case, make it.

“This whole simplification of ingredient statements, it’s a big issue for the food industry right now and most if not all of it is being driven by perception, that these are going to be more healthful for you,” he said. “As far as we know it’s all safe, but I do know anecdotally there are people who swear that if their kids eat red 40, they go crazy. But that’s OK, we’re here to please the market.”



Elevate your garden guacamole

Looking for a way to elevate your guacamole? Watch this short video to learn a few tricks that will add new flavor and textures to your recipe.

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