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ADORING A VACUUM

FORGET FOAM—THE NEXT BIG CULINARY WAVE IS AN ODD MACHINE CALLED THE GASTROVAC. HERE'S WHAT HAPPENS WHEN CHEFS AND CHEMISTS COOPERATE *By Lisa Abend/Valencia*

tHE BABY HAKE ON THE MENU AT EL Rodat in Javea, Spain, is a marvel of equilibrium. At once intensely flavorful and delicately light, it is the sort of exquisite dish you would expect from a chef who began his education at Barcelona's top culinary school and later apprenticed with Alain Ducasse in Paris. But the secret to Sergio Torres' fish lies less with the young chef's impressive training than with an unlikely sounding machine called the Gastrovac. The device, which both vacuum cooks foods at extremely low temperatures and infuses them with the flavors of the liquid in which they are poached, is not much to look at, but Torres is thrilled with what it does. "Look at the skin," he exclaims, pulling the hake out of the Gastrovac and plating it with a caper and red pepper broth. "It has the same sheen as it did when it was raw!"

Call it the Blumenthal-Adrià effect. Ever since Europe's two famously avant-garde chefs, Heston Blumenthal and Ferran Adrià, began using liquid nitrogen to freeze mousses tableside and siphons to turn squid ink into foam about five or six years ago, the walls between the laboratory and the kitchen have begun to crumble. "This is the great revolution in cooking right now: the incorporation of industrial techniques into the kitchen, and the collaboration between scientists and chefs," says José Carlos Capel, food critic for Spain's *El País* newspaper. The patented

Gastrovac is the result of that kind of collaboration. To design it, Torres and Javier Andrés, of Valencia's well-regarded La Suncursal restaurant, joined forces with a team of scientists at Valencia's Polytechnic University. But there's a big difference to the Gastrovac's goal: while Adrià and Blumenthal routinely rely on kitchen alchemy to turn one food into another (this summer's menu at Adrià's El Bulli in Rosas, Spain, features gelatin and olive oil made into "false olives" and melon turned into caviar), the Gastrovac uses technology to make food taste more like itself.

It started with vegetables. Torres and Andrés, friends since they were teenagers, were looking for a way to cook that would, in the words of Andrés, "respect the vegetable." In 2003, their pursuit led them to the Polytechnic's Department of Food Engineering, where they knocked on several doors before finally being directed to the lab where Xavier Martínez, Purificación García and Neus Sanjuan had been working for years on vacuum cooking. At first, there was a bit of culture shock as chefs and scientists tried to adapt to each others' way of thinking. "We spent the first month just trying to agree on vocabulary," says Torres. "Were we 'cooking in a vacuum' or 'vacuum cooking'?"

Within months, however, they had completed the first prototype, an ungainly contraption whose three pieces were joined by long hoses and cables. "We





KITCHEN SCIENCE: Torres puts fish into his invention, left; below, orange sorbet with cherries deoxygenated by Gastrovac

called it our garage model," says Martínez, "because it looked like something a mechanic would put together." So dubious was the machine's appearance that, when the team was stopped for a road inspection on its way to present the Gastrovac at a conference in San Sebastián, they spent two hours convincing the Civil Guard that the contraption in the trunk was intended for cooking vegetables, and not, say, blowing up train stations.



THE WALLS BETWEEN THE LABORATORY AND THE KITCHEN HAVE BEGUN TO CRUMBLE

The newer, sleeker version of the Gastrovac, developed earlier this year, still looks like a pressure cooker attached by rubber hose to a high-tech hot plate, but its functions are thoroughly space age. By lowering atmospheric pressure, it brings liquids to boil at temperatures much lower than normal—55°C for water, 80°C for oil—while still cooking more quickly than traditional vacuum cookers. Lower temperatures and shorter cooking times keep the cellular structure—as well as the color, texture and nutrients—of foods intact.

But that's not all: by pushing a button on the Gastrovac that breaks the vacuum, the device essentially turns the food into a sponge, sucking the poaching liquid into the pores where oxygen used to be. The result is a deep, penetrating flavor, without the need for a lot of butter or oil. And because food prepared in a Gas-

trovac has most of its oxygen removed, it oxidizes at much slower rates; sliced Gastrovac'd peaches and apples can last days without turning brown.

Thirty-five chefs have already purchased their own Gastrovacs, including Wylie Dufresne, Joan Roca and—no surprise—Adrià. The €2,900 price tag puts the device out of the reach of most non-professionals, but Marc Calabuig, director of International Cooking Concepts, which markets the Gastrovac, notes that one home cook has made the investment, and he expects more to follow. "The line between professional cooking and home cooking is blurring all the time," he says.

Although the Gastrovac clearly has show-off potential (Martínez admits his team has already tried impregnating ordinary button mushrooms with the flavor of truffles), Torres and Andrés, who call themselves "artisans," hope it will be used primarily to enhance—not transform—ingredients. Torres himself, for example, uses the machine to prepare desserts like cherries penetrated with vanilla and spice that still, remarkably, have the firm texture of freshly picked fruit. And Dufresne, chef at New York City's wd-50, eagerly awaits the arrival of his recently ordered Gastrovac to experiment with improving fried foods. "Tempura, for example, can be a tricky thing to make—the vegetables can get soft; seafood can be overcooked," he explains. "With its lower temperatures, maybe we can use the Gastrovac to make a better, more foolproof tempura."

For the team at the Polytechnic, that kind of interest has been invigorating. "Usually, no one pays any attention to us," says biologist García. "But the chefs have been really interested in what we do." That said, in a department where most of the faculty are dedicated to projects like desalting cod for industrial purposes, Martínez, García and Sanjuan occasionally have to convince their colleagues of the seriousness of their work. "They think we're playing chef," says Martínez.

Still, more and more academic scientists are getting used to the idea. In Spain alone, science departments at universities in Zaragoza, Murcia, Extremadura and Granada have all recently started programs to work directly with chefs, and next year, Catalonia's Food and Science Foundation moves to its own campus. "This is not some passing fad," says Capel, referring to the collaboration. "It's about learning to treat ingredients better. And that is what cooking is all about." ■