

JULY 21, 2011, 12:59 PM

Young Sleuths Find Herbal Teas as Mysterious as Sushi

By *JENNY ANDERSON*

DNA Learning Center [via Youtube](#) Rohan Kirpekar, Catherine C. Gamble and Grace Young, teenage tea impurity sleuths, describe their investigation and show their work.

[Scientific Reports](#), a Nature journal, published [research](#) on Thursday showing that a significant percentage of herbal teas tested contained ingredients the tea manufacturers failed to list.

If that sounds shocking, so might this: The researchers included one freshman and two seniors at the [Trinity School](#), one of Manhattan's top private schools.

Catherine C. Gamble, a senior who will be attending Harvard this fall; Rohan Kirpekar, who will be attending Columbia University; and Grace Young, a rising sophomore, used DNA barcoding, a kind of genetic fingerprinting, to test 70 tea products and 60 herbal products to see what was in them. Four percent of the 70 tea products they tested and 35 percent of the herbal products had unlisted ingredients, including white goosefoot, a weed; Taiwanese cheesewood, an ornamental tree; and, most often, chamomile and plants closely resembling parsley.

"It is significant that consumers know what they are buying," Ms. Gamble said.

The three students are part of what seems to be a growing tradition at Trinity: teaming up with scientists at the [Rockefeller University](#) to use new DNA testing to examine popular items.

In 2008, a group of Trinity seniors investigated the sushi they loved to eat and discovered that a fourth of the sushi they sampled was mislabeled. The investigation was given the name "sushigate," and [an article in The New York Times](#) prompted outcry.

The following year, students examined the different species living in their apartment buildings (teenagers can be bold creatures). Among their findings was a new kind of cockroach, which is currently being tested at the London Natural History Museum, according to [Jesse H. Ausubel](#), director of the [Program for the Human Environment](#) at Rockefeller University.

This year the students undertook the study of tea, the world's most popular drink. Their findings do not feel quite as alarming as those in the sushi affair, which revealed that Mozambique tilapia was masquerading as white tuna. After all, the students and scientists

involved, including an ethnobotanist at Tufts and a molecular botany expert at the New York Botanical Garden, found what seem like harmless ingredients. (What's the big deal about a whiff of chamomile or a dash of white goosefoot?)

But consumers want to know, especially those with allergies. The investigators did not confront the manufacturers or examine how and why the unlisted ingredients came to be there.

“It might just be a weed picked up during harvesting of the residue of a plant used in one product gets passed to the next product in a processing facility,” speculated Ms. Young, the youngest of the citizen-scientists. Another thought was that perhaps the tea bags had been deliberately padded to make them look prettier.

On top of discovering unlisted ingredients, the group also uncovered previously undocumented genetic differences in Indian and Chinese teas.

“You would expect some evolution and adaptation,” Mr. Ausubel said. “But no geneticist or botanist had ever recognized it.”

The students conducted the research with \$5,000 worth of equipment they bought on eBay, using Rockefeller money.

First the students extracted and amplified the DNA on the dining room table of Dr. Mark Stoeckle, an adjunct faculty member with Rockefeller's Program for the Human Environment, and the father of one of the Trinity scientists involved in the sushi case.

The New York Botanical Garden did most of the DNA analysis, then sent the DNA sequences to the students. They pasted the information into a special search engine to find matches.

The students spent about two hours a week, for six months, working on the project.

“It was a lot of fun and made science feel closer and more accessible to me,” Ms. Young young.

Ms. Gamble said it also helped on her college application. “I'm sure it helped me a lot.”

Note to future Harvard applicants: [Being published in a scientific journal helps.](#)