Alloxan

Listen to the following remarkable commentary I came across on the web. Here goes: "I was just utterly shocked to have recently discovered another FDA first degree murder! When I studied chemistry forty plus years ago, they were using a fairly benign bleaching agent to bleach white flour. Now it comes out they have started using alloxan! Alloxan is a poison, the most famous spinner up of super oxide free radicals known to science! It is used to chemically produce diabetes in normal rats, because alloxan spins up enormous amounts of free radicals in pancreatic beta cells, utterly destroying them! The very last thing we need added to our diet is alloxan, which the FDA is now force feeding us in white flour! Boy! Is the FDA ever making it hard to get any wholesome food in this country!"

Normally I would just let such folly pass, but given that the author of this penetrating chemical insight is a medical doctor, I think a few remarks are warranted. As is often the case, such paranoid fears arise from a kernel of scientific truth, which the conspiracy theorist does not understand, and proceeds to spin out of all control. Let's start with that kernel of truth. Alloxan is a compound that can indeed destroy cells in the pancreas and cause diabetes in rats. Researchers use it to induce the disease so they can study treatments. But this compound, which is synthesized in the lab for medical research, has no other commercial application. It most certainly is not used to bleach flour. It may however be formed in small amounts in flour during the bleaching process. Milled flour is yellow due to the presence of compounds called xantophylls. If the flour is allowed to stand exposed to air, the xantophylls react with oxygen and the flour turns white. But this is not a commercially viable process and the industry therefore relies on chemical bleaching commonly using chlorine, chlorine dioxide or potassium bromate. Bleaching also improves the properties of the flour so that its gluten proteins form more elastic doughs.

One of the possible minor side products of xantophyll oxidation is alloxan. It may therefore conceivably be found in small amounts in flour. There is no available research that shows trace amounts are a problem or that alloxan builds up in the body. The amounts, if present at all, must be small because xantophylls themselves only occur to the extent of 1 microgram per gram of flour. Basically then the suggestion that alloxan is used to bleach flour is absurd, as is the allegation that the FDA is trying to undermine the health of the public. Still this physician's stupid remarks may serve a purpose if they make people turn to baked goods made from whole grain unbleached flour. Whole grain products are far superior nutritionally to those made with bleached white flour but this has nothing to do with alloxan, which may or may not be present in trace amounts in bleached flour.

by Joe Schwarcz