Biomedicine

MSG: Not all it's cooked up to be?

It all started in 1968, with a letter to the NEW ENGLAND JOURNAL OF MEDICINE by a physician describing a strange set of symptoms he suffered after dining at a Chinese restaurant. The symptoms were numbness, weakness and palpitations; the suggested culprits were salt, cooking wine or monosodium glutamate (MSG). The report generated concurring anecdotes, experimental MSG administration fingered the flavorant and "Chinese restaurant syndrome" was born.

But recent reports in two medical journals suggest that MSG might not be the culprit, and that the syndrome is less common than its purported sufferers believe. In the current issue of FOOD AND CHEMICAL TOXICOLOGY (Vol. 24, No. 4), Richard A. Kenney of George Washington University in Washington, D.C., reports on his study of six people who said they were sensitive to Chinese restaurant food.

All six were given soft drinks with MSG and, at another time, the same drinks without MSG. Sodium was added to the MSG-free solution so that the two drinks contained an equal amount of sodium; the flavor of the soft drink masked the presence of the additive. Four of the six had no response to either drink; the other two suffered tingling of hands and warmth behind the ears with *both* drinks. The study, says Kenney, shows that if Chinese restaurant syndrome does indeed exist, it takes more than MSG to trigger it. However, the study doesn't completely exonerate the additive. The chance that MSG acts in concert with something else in Chinese food is still a possibility, he says.

In a separate study, Jonathan K. Wilkin of the Veterans Administration Medical Center and the Medical College of Virginia, both in Richmond, looked specifically at one of the symptoms of Chinese restaurant syndrome — face flushing. Using a Doppler velocimeter, which measures blood flow through the skin by bouncing light waves off red blood cells, he found no flushing in the faces of six men given progressive MSG doses building up to four to six times the amount in a typical bowl of wonton soup. Prior to the study, half the men had reported symptoms of Chinese restaurant syndrome.

"The bottom line," says Wilkin, "is that MSG does not lead to flushing. It's entirely possible other spices, for example capsaicin [found in hot peppers], do."

Wilkin's study, part of an investigation into illness-associated flushing, was supported by the Veterans Administration. The International Glutamate Technical Committee, an industry group based in Atlanta, paid the travel and hotel expenses of the six subjects of Kenney's experiments.

Screening to prevent an enigmatic illness

To improve the safety of donated blood, the Arlington, Va.-based American Association of Blood Banks, which collects nearly half the blood donated in the United States, announced last week its plans to use two surrogate tests for non-A, non-B hepatitis in donor blood. This liver infection is caused by a mystery particle (SN:12/8/84,p.360).

Neither test identifies the infectious particle directly. The first test, which detects an enzyme released by any liver in distress, has already been implemented by the American Red Cross. The test can be positive as a result of non-A, non-B hepatitis or other conditions, including obesity or alcohol ingestion. The second test is for the presence of an antibody to hepatitis B, which for reasons yet to be determined also tends to appear in conjunction with non-A, non-B.

According to the association, about 5 percent of donated blood will come up positive on these tests and be discarded; while the tests won't identify all contaminated blood, they are expected to prevent about 50,000 post-transfusion hepatitis cases per year.

Technology

Putting it on paper permanently

The National Archives building in Washington, D.C., houses more than 3 billion government documents. The collection includes such items as the water-stained log of a Civil War steamer that was blockading the North Carolina coast, correspondence received during the 1920s by the U.S. Consul in Yokohama, the pension files of military veterans, census and immigration data, and much other information — all stuffed into file boxes, packed into metal cases and bound as thick volumes. The problem is that about 530 million of these paper-based records are in poor condition. The most heavily used documents are deteriorating rapidly.

To solve the problem, the National Archives and Records Administration (NARA) asked a National Academy of Sciences panel for advice on how to preserve these crumbling records. The panel's report, released recently, concludes that the best way to save the papers is to photocopy them onto paper fabricated to last or to copy them onto microfilm. Transferring the records to computer-based magnetic tape or optical disks is not an acceptable option, the panel says.

The trouble with magnetic and optical storage is that these technologies are changing very quickly. Over the last 30 years, for instance, video tape has gone through at least nine different formats, some of which are now obsolete. Moreover, much of the equipment, both hardware and software, to read such tapes is no longer being manufactured or maintained.

Magnetic tapes and disks themselves last only 10 to 20 years. Tapes can stretch; binders fixing magnetic particles into place on plastic films can be unstable. Thus magnetic files must be recopied every 10 years or so. And because so much information can now be packed into very small areas, even small-scale physical deterioration can result in large data losses.

Optical storage has similar problems. Although the low-power lasers that illuminate compact or digital audio disks, for example, cause no damage when reading the disks, the long-term stability of materials used to coat disk surfaces is unknown. Most estimates put disk lifetimes at 20 years or less.

In contrast, paper, when properly cared for, can last for hundreds of years. Microfilm has a similar lifetime. Ironically, many of the paper records more than a century old are in much better shape than more modern papers, most of which have a high acid content. Papers produced by Thermofax, Mimeograph and similar "quick-copy" processes, some only 20 or 30 years old, are already falling apart.

The panel recommends that government departments and agencies, which send records to the Archives, should use acid-free paper. The cost of such alkaline papers is now close to that of conventional paper. The academy's report, "Preservation of Historical Records," is itself printed on "archival" paper.

The same kind of paper should be used when deteriorating paper records are photocopied, the panel suggests. Removing the acid from stored papers (SN:3/5/83, p.154) is generally too expensive and may itself cause further damage.

"We're already implementing many of the things that are recommended," says Alan R. Calmes, NARA's preservation officer, "but there's more we've got to do."

One step is to institute a screening process so that the condition of papers can be checked every time a researcher calls for a particular item. Materials that are properly boxed and rarely used, even when the paper is highly acidic, suffer relatively little damage. Handling and exposure to light and air are the main culprits.

Archives staff already routinely repackage papers into boxes made from acid-free cardboard, remove corroding fasteners such as paper clips and staples, and replace old government-issue filing folders. Those folders are often so acidic that they're known as a file's "kiss of death."