

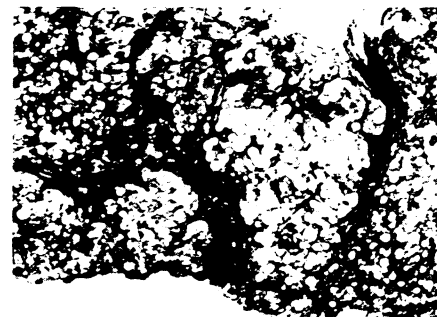
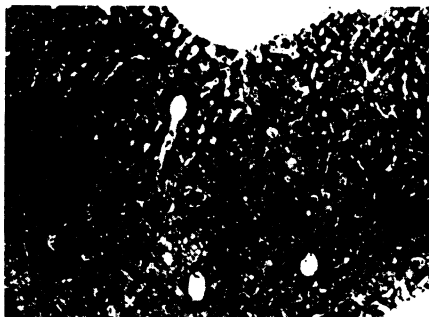
Soybean Lecithin May Prevent Cirrhosis

A decade-long baboon study indicates that lecithin, a soybean extract used in many processed foods, can delay and perhaps even prevent alcoholic cirrhosis of the liver. Moreover, test-tube experiments suggest that lecithin may reverse early stages of cirrhosis — a currently untreatable, liver-scarring disease that ranks as the fourth leading killer of U.S. urban dwellers aged 25 to 65.

“For the first time, we have a possible handle on this disorder,” says alcohol researcher Charles S. Lieber. “Even if we only make a dent in the problem, it would be extremely meaningful, considering the number of people involved.”

Ten years ago, Lieber and his colleagues at the Bronx Veterans Affairs Medical Center and the Mount Sinai School of Medicine in New York City began feeding 12 baboons either of two diets supplemented with about three tablespoons of soy lecithin daily. Six of the supplemented animals ate a standard baboon diet, while the other six consumed a diet comparable to that of chronic alcoholics, with half of its calories derived from alcohol — providing a daily alcohol intake equivalent to the human consumption of eight cans of beer. The team compared the 12 supplemented baboons with 18 others on lecithin-free versions of the same two diets.

Seven of the nine baboons on the unsupplemented alcohol diet developed severe liver scarring; two of those seven showed full-blown cirrhosis. In contrast,



Lieber et al./HEPATOLOGY, Vol. 12, p. 1394

Left: Liver tissue from baboon fed lecithin along with an alcohol-laden diet for three years shows only minor scarring between cells. Right: Liver tissue biopsied 18 months after lecithin was withdrawn from this animal's diet shows severe scarring (dark bands), the hallmark of cirrhosis.

baboons consuming both alcohol and lecithin showed insignificant scarring, and none developed cirrhosis even after eight years on the test diet, the team reports in the December HEPATOLOGY.

The researchers then focused on three baboons from the lecithin/alcohol group, withdrawing the lecithin but continuing the alcohol diet. Within two years, all three developed cirrhosis. Lieber says this finding clinches his team's hypothesis that lecithin protects against cirrhosis.

The protective mechanism remains unclear, in part because the specific cellular processes leading to cirrhosis are still a mystery. However, Lieber says studies by his group and others suggest two possible modes of action for the soy extract.

Lecithin belongs to a class of compounds called phospholipids — key constituents of cell membranes in plants and animals. Lieber and his co-workers began their study armed with evidence that cirrhosis in humans is accompanied by changes in the liver's phospholipid content. In earlier studies, they had detected alcohol-induced phospholipid abnormalities and had hypothesized that this could degrade the membranes of liver cells, eventually killing the cells and leading to extensive scarring. Noting that phospholipid supplements apparently helped lower blood cholesterol and treat hepatitis in a few preliminary European studies, the New York team reasoned that adding lecithin to the diet might halt alcohol's ravages of liver tissue.

Pathologist Emanuel Rubin argues that a lecithin supplement may not help membranes maintain their rigidity in the presence of alcohol. His studies at Thomas Jefferson University in Philadelphia indicate that alcohol does not alter the lecithin concentration of certain membranes in rat livers, he says.

Lieber now proposes a second mechanism for the protective effect, based on preliminary *in vitro* studies of baboon liver cells. This unpublished work, he told SCIENCE NEWS, indicates that lecithin breaks down fibrous tissue formed when alcohol “transforms” the liver's lipocytes (cells that normally store vitamin A) into scar-tissue factories. In the diet study, he adds, lecithin-fed baboons showed a significantly smaller percentage of transformed lipocytes than did baboons never given the compound.

Lieber says he plans human trials to test whether lecithin can prevent alcohol-induced cirrhosis or possibly reverse the early stages of the disorder. “Certainly, it's premature to package lecithin and sell it to alcoholics,” says Rubin. But he says the approach appears promising — especially if physicians can identify high-risk alcoholics.

— R. Cowen

Another gap in mapping Venus

NASA blames an engineer at its Jet Propulsion Laboratory (JPL) for incorrectly sending a series of computer commands late last week, an error that shut down the mapping of Venus by the Magellan spacecraft for four complete orbits of the planet. Flight-controllers at JPL in Pasadena, Calif., eventually corrected the problem, which spokesman James J. Doyle calls Magellan's first mapping loss due to a human programming error.

Though blank spaces should have separated each of the commands sequentially radioed to the spacecraft on Nov. 23, the JPL engineer inadvertently omitted them. Magellan's computer, functioning correctly, responded to this irregularity by automatically turning off the craft's radar transmitter and receivers, its two tape recorders, and one of the transmitters that sends data to Earth, says Doyle. When the error was corrected, the mapping resumed.

Five times since Sept. 15, when Ma-

gellan began its mapping mission, scientists have failed to receive expected images of Venus' cloud-shrouded surfaces, resulting in the loss of data from 11.8 mapping orbits. (A “mapping orbit” designates the 37 minutes of actual mapping that occurs during each of Magellan's 3-hour, 15-minute circuits of Venus.) As of Nov. 26, Magellan had completed 423 mapping orbits and charted about 23 percent of the planet's surface.

Aside from the most recent incident, project engineers remain uncertain what caused the data losses. However, they suspect such things as static in onboard electronic equipment, loose wires, and problems at NASA's tracking stations in Australia and Spain that may have prevented data reception. Twice during its checkout phase in August, Magellan also lost radio contact with Earth — again inexplicably — for more than half a day each time (SN: 9/1/90, p.135). □