The Acid Test: A Way to Quit Smoking?

University of Nebraska researchers believe they may have found a "revolutionary, biochemical way to help people quit smoking." Preliminary results of their first experiments with 42 men and women were scheduled to be presented at the April 16 meeting of the Rocky Mountain Psychological Association in Las Vegas. The data from that still-unpublished research were made available to SCIENCE NEWS by A. James Fix, psychologist at the university's Regional Chest Center and leader of the study team.

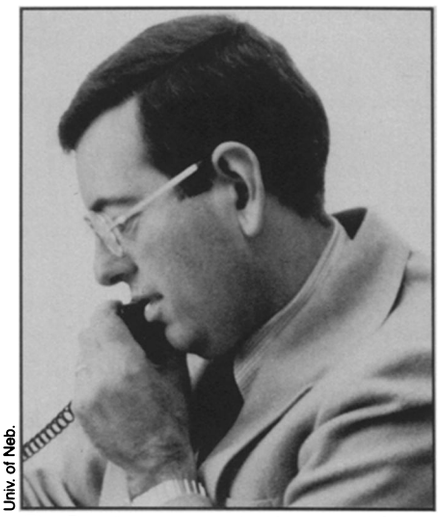
"The results are very tentative, very tenuous ... but it could be the breakthrough that the surgeon general says we've never had," Fix said in an exclusive interview. The treatment that seems to enable chronic smokers to drastically cut down on or eliminate cigarettes involves the administration of simple sodium bicarbonate. The possibility of such an approach was first suggested by Columbia University psychologist Stanley Schachter (SN: 5/7/77, p. 297). Schachter found that persons with high levels of acid in their urine were likely to smoke more, and those with lower acid levels smoked less. Highly acidic urine tends to excrete more unmetabolized nicotine from the body, which, in turn, creates a greater physical craving to replace that lost nicotine, he explained. Schachter further found that students who took acid lowering bicarbonate tablets in stressful situations smoked less than those who took placebo tablets. After seeing the Columbia results and conferring with Schachter's colleague Brett Silverstein, Fix formulated the next logical step — to test the method on smokers who wanted to stop, but couldn't. "A gong went off in my head," he says, "and we wrote up a proposal and did a study."

Working with the American Lung Association, Fix and colleagues Irving Kass, Joseph Shipp and Jack Smith attracted 88 volunteers from the Northwestern Bell Telephone Co. in Omaha. The 42 men and women who eventually completed at least four weeks of the five-week experiment were divided into three groups, matched by sex, age, daily cigarette consumption and other factors. One group in the "semi-blind" study received the equivalent of almost four grams a day of bicarbonate, another group received two grams a day of acid-raising vitamin C, and the third group took nothing. (Participants in the first two groups knew they were taking one of the two substances, but they did not know which one was supposed to help them quit smoking.)

The results — which Fix emphasizes are extremely preliminary — indicate that "the bicarbonate people did best on every measure you can get — in total cessation and the ability to cut down." During the first four weeks of the study, comparable rates of decline were seen among all three participating groups. Volunteers who started the program smoking close to 30 cigarettes a day had cut back to 7.5 to 8.7 cigarettes a day by week four. Fix describes this as a "compliance effect or motivational effect." "This is no surprise," he says. "The people who really came to the groups and did everything we said were the most likely to quit [or cut back]."

By the fifth week, however, the effects of the drugs themselves became statistically significant beyond any compliance or placebo effect (bicarbonate and vitamin C were given in the third, fourth and fifth weeks — the first two weekly sessions involved tests and instructions but no pills). In the fifth week, Fix's group obtained results that he terms "totally astonishing": The bicarbonate group's average daily consumption dropped drastically to 0.14 cigarettes, while the vitamin C and placebo groups went to 7.8 (up slightly from the fourth week); moreover, bicarbonate takers proved more likely to abstain from smoking for a 48-hour period.

Fix is quick to note that because of the number of program dropouts, problems in controlling pill-taking compliance and other factors, he is reluctant to announce conclusive "proof" that sodium bicarbonate helps "cure" smokers. "But we did get some significant results that have shown our hypothesis to be a totally viable one," he says. "We plan to do a better study where all the people are kept in and totally controlled." What the results do offer, he says, is hope for chronic smokers to cut down and eventually stop smoking without going cold turkey, a method that most researchers believe is "the only way to go," Fix says.



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Fix: Results are tentative but astonishing.

"But most people, if you talk to smokers, hate going cold turkey," he says. "They want to cut down, and this may be the first chance they have to do it [stop smoking] by cutting down." Fix suggests that bicarbonate alone may not be the only remedy; "adding beet and spinach greens [and other alkalizing foods] to the daily diet might have much more profound alkalizing effects than four grams of sodium bicarbonate."

John Pinney, director of the Department of Health, Education and Welfare's Office of Smoking and Health said he is somewhat familiar with work on the acid-smoking connection, and added that Fix's results sound "fascinating ... encouraging." "If we've got 53 million smokers, we've got 53 million different kinds of smokers," he said. "If we can find some common denominators between them — biochemical or otherwise — then that will help." □

Making the most of the CO_2 problem

Policymakers got the first official signal last week of a growing scientific opinion on the carbon dioxide issue. The message is: Don't panic, stay adaptable; increasing CO_2 might not really be a "problem" — it could even be of net benefit.

This apparent turnaround from warnings about the use of fossil fuels and the "greenhouse effect" that might melt polar ice caps and wipe Miami Beach off the map was presented in Annapolis, Md., at a conference called "The Environmental and Societal Consequences of a Possible CO_2-Induced Climate Change." Sponsored by the Department of Energy's Division of Carbon Dioxide Research as part of a master plan to get a grasp on the CO_2 issue (which is supposed to culminate in "an authoritative report" by 1984), five panels were charged with outlining specific steps in the physical, biological and social sciences toward handling the effects of CO_2.

The panels relied on a well-accepted scenario: Based on current rates of increase, atmospheric CO_2 will double by 2050, causing an average global warming of 6°C and an overall increase — with changing patterns — in precipitation.

The panel on oceans and polar regions, headed by Francis Bretherton of the National Center for Atmospheric Research in Boulder, Colo., pointed out that increased CO_2 will have its greatest effect on fisheries and the West Antarctic ice sheet. Warmer temperatures will result in weakened winds, which in turn will reduce the mixing and circulation of the oceans. As ocean upwelling is reduced, the pro-