

Early test for diabetes found

Serendipity and good science have enabled biochemists from Georgetown University to confirm, as one of them puts it, "a new concept of profound importance to the medical world," and, in the process, to develop a test for early detection of diabetes.

Melvin Blecher, Steven Goldstein and Richard Binder have discovered that two hormones involved in the body's processing of sugars, insulin and glucagon, bind less well to the white blood cells of diabetics and potential diabetics than to the white blood cells of normal individuals. This poor binding is an indication, Blecher says, that receptor sites on the white blood cells either don't recognize the hormones that they should bind or are too few in number to bind them properly.

This idea, that the deficient binding of hormones to membrane receptors might be linked to diseases such as diabetes, "opens up a whole new area of investigation," Blecher says. "For years, medicine has known about patients who appear to be resistant to the action of certain hormones," but, for an equal length of time, has not understood the reasons for it. This new concept could be used to investigate other diseases as well as diabetes, he says, such as acromegaly (enlargement of the face, hands and feet), hyperthyroidism and pituitary diseases.

Blecher's team did not propose the binding deficiency theory, but their attempt to test the relationship of it to diabetes is the most significant confirmation thus far. The report appears in the December ENDOCRINE RESEARCH COMMUNICATIONS.

"Diabetes," Blecher says, "is a geneticist's nightmare. It is multifactorial and can onset early, as in juvenile diabetes, or late, in adults. These adults often have normal amounts of insulin, but after diabetes is triggered, it just doesn't function correctly to regulate sugar metabolism." Insulin and glucagon bind to "target tissues" in the body: adipose tissues, for example, and liver tissue. "But humans scream when you take big chunks of their liver," Blecher joked, so the team used white blood cells instead. And this is where the serendipity comes in.

It is unclear why, but the hormones bind to mononuclear leukocytes (white blood cells) just as they do to target tissues. It is easy, therefore, to get an accurate reflection of hormone binding to target tissues where insulin and glucagon must bind and act by removing and studying blood. With this system, the team decided to look at adult diabetics as well as individuals with a genetic history of diabetes in their families and a normal control group. And this is where the predictive diabetes test comes in.

"To our surprise," Blecher says, the team found that nine of ten of those with diabetes in their families, as well as all the frank diabetics tested, showed deficiencies in hormone binding to white blood cells. "There has never been a way to predict which adults genetically predisposed to diabetes will actually develop it and which won't," he says, but this test may offer that kind of prediction. These "covert" diabetics could then be watched carefully and given preventive diets.

Although the team is pleased by the potential application, the test is by no means simple or even available. "One postdoctoral researcher in our lab must spend all day just to work up two patients," Blecher says, "and we have to prepare radioactive hormones ourselves weekly." The team plans only to pursue basic research on hormone binding, but, he says, "we will gladly cooperate with others on a clinical application." □

Muddling toward metric: Another step

Last among the world's industrial nations, the United States has finally adopted an official policy of "going metric"—sort of. Legislation signed late last month by President Ford creates a board to coordinate conversion to the metric system and states a policy of "increasing use." But no deadlines are set, financial incentive offered or definite commitment given, even for the Federal Government.

The Metric Board will consist of 17 members appointed by the President and drawn from lists prepared by various interest groups, including engineers, retailers, organized labor and industry. The chairman must face Senate confirmation. Created mainly to coordinate rather than enforce conversion, the board will conduct studies, hold meetings of interested parties, publicize the conversion program and consult with foreign governments. A yearly report must be submitted to the President and Congress on the progress being made.

The likely effect is that some industries that do considerable foreign trade or utilize developing technology—most of which is done in metric already—will immediately switch to the metric system. Some cars and computers are already built to metric specifications. Other high-volume, internationally traded commodities, such as steel, should quickly follow suit. At the other extreme, under the present law, some industries will probably never go metric. Tool and die manufacturers are expected to be particularly resistant and so are such purely domestic industries as cooking utensils.

But large ambiguities lie between these two extremes, and whether or not Americans are still thinking in pints and pounds a decade from now probably depends in

large part on how aggressively the Federal Government demands metric specifications when it lets contracts. An interagency committee exists to study the issue, but so far as one can tell, no across-the-board commitment to metric has been made by any department. Some activity has already begun, of course. Certain crop announcements are now metric, and weather forecasts may soon be given in both Fahrenheit and Celsius. But whether the Defense Department will use its huge procurement leverage to encourage metric conversion remains to be seen.

Probably the most optimistic aspect of the metric drive comes in the educational system. Every state school department has some sort of metric education activity underway and some programs have developed dramatically. The acting director of the National Bureau of Standards, Ernest Ambler, says the new law should stimulate additional trade and "have a positive effect on the United States' balance of payments."

But more than a hundred years have passed since Congress first adopted the metric system as a legal alternative. Ambler's declaration that the country is now "beginning a new era" might prove a bit premature. □

U.S. Antarctic base closed; 12 evacuated

The 1976 research season at Siple Station, the smallest, newest and most isolated of the four U.S. scientific outposts in Antarctica, has been scrapped due to development of symptoms of hepatitis among one of the twelve men there. The station is being evacuated and closed, the National Science Foundation announced last week, to avoid the danger of any other personnel getting the disease during the coming Antarctic winter, when the station is without physical contact with the rest of the world for at least six months.

The station is the site of a pioneering series of studies by Stanford University scientists of "whistlers," low-frequency radio signals that travel along earth's magnetic field lines. Studies at Siple last year established, among other things, that the U.S.-Canadian electric power grid is affecting the radiation belts that encircle the earth (SN: 10/11/75, p. 228). All such research is now postponed until the 1976-77 austral summer.

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The most recently damaged of several U.S. C-130 Hercules transport planes stranded in Antarctica (SN: 12/6/75, p. 357) has been successfully flown to Christchurch, New Zealand, for repairs, the first C-130 ever salvaged from the bottom of the world. A 17-man crew worked four days to make the \$18 million craft flightworthy, before lifting from the snow on Dec. 27. □