

BIOLOGY

Synthetic Pain-Killing Drug May Be Morphine Substitute

Although Demerol Is Habit-Forming, It Does Not Cause Physical Craving for the Drug as Does Morphine

DEMEROL, new synthetic pain-killing drug that comes closest of any so far developed to being the long-sought safe substitute for the poppy's morphine, was introduced to American scientists at the meeting of the Federation of American Societies for Experimental Biology in Boston.

Favorable results from its first U. S. trials on nearly 1,000 patients and laboratory animals were reported by Dr. David R. Climenko, of the Research Laboratory of the Winthrop Chemical Co., Dr. Robert C. Batterman, New York University College of Medicine, and Dr. H. L. Andrews and Dr. C. K. Himmelsbach, of the U. S. Public Health Service's hospital for narcotic drug addicts at Lexington, Ky.

Summing up the observations of these men, it appears that relief of pain requires larger doses of Demerol than of morphine. Making up for this is the greater safety of Demerol which allows physicians to give much larger doses of it than of morphine.

The pain-relieving effect starts within 15 or 20 minutes and lasts for as long as six hours. It is most dramatic in patients suffering from the excruciating pain caused by kidney stones and gallstones.

Demerol, like morphine, is habit-forming, but unlike morphine, it has almost no addiction property, that is, it does not cause physical craving for the drug to the extent that morphine does. Laboratory animals could not be addicted to Demerol. Humans who had been morphine addicts became addicted to Demerol but only when given daily doses 35 times the size used to relieve pain in sickness or after surgical operations.

Demerol was first developed in Germany but is now being made in the United States. It is not yet available except to research institutions, pending approval by the U. S. Food and Drug Administration of an application for its more general release. Even if it becomes available commercially, it will probably

not be sold without a physician's prescription. This is because it is a habit-forming drug and one which makes a person feel so good right after taking it that it would be unsafe to allow it to be sold without restrictions.

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May Not Need Extra B₁

HEAVY drinkers of whisky and other alcoholic beverages probably do not require extra amounts of vitamin B₁ to protect their nerves and keep them healthy.

Experiments casting "considerable doubt" on the current theory that alcohol increases the body's need for this

vitamin were reported by Dr. J. V. Lowry, Dr. W. H. Sebrell, Dr. F. S. Daft and Dr. L. L. Asburn, of the U. S. National Institute of Health.

In these experiments rats kept on the water wagon without exception developed the severe nervous disorder believed due to B₁ deficiency in alcoholism before their litter mates that were getting alcohol or whisky. The nervous disorder could be prevented and cured by the vitamin, regardless of whether the rats drank alcohol, water or whisky.

These experiments give the first indication that alcohol does not require vitamin B₁ to help burn it in the body. They suggest that a person who sticks to a good diet could probably drink a quart of whisky daily without needing extra vitamin B₁ to burn the alcohol. If, however, he neglects his diet, as alcoholics probably do, and fails to eat enough foods containing vitamin B₁, he would develop the nervous disorder. The whisky or alcohol could be blamed for causing the change in diet but not for causing the sickness by depleting the body of the vitamin.

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RETREADING

Locomotive tires can be retreaded now even if automobile tires may not. Worn mine locomotive tires, once junked, are now being retreaded several times with each retread good for as much mileage as the original tire. The retread is steel.

Food Lack Causes Baldness

BALDNESS, cataracts of the eyes, poor teeth and inability to father offspring all may result from lack of one single food chemical in the diet, tryptophane.

This discovery was announced to the Federation of American Societies for Experimental Biology. The new studies that are expected to aid the vast job of post-war feeding of a starved world, were made by Dr. Wilhelm Buschke, Dr. Anthony A. Albanese and Dr. Richard H. Follis, Jr., of the Johns Hopkins University.

Tryptophane, the food chemical lack of which can bring on the four symptoms, is one of the 10 essential amino acids which are building blocks of proteins.

The proteins of cereals or grains in general contain considerably less tryptophane than proteins in animal foods such as meat, fish, poultry, eggs and milk. The discovery just reported indicates the danger of relying entirely on cereals as source of protein, as might be done in a post-war world faced with grave shortages of meat and other kinds of foods.

The danger of one-sided diets containing inadequate sources of amino acids has long been suspected. Studies by other scientists have shown that laboratory rats cannot manufacture the 10 essential amino acids in sufficient amounts in their bodies to supply their needs for normal growth. It was assumed that man also required these protein building blocks in his food.

The new discovery, however, shows for the first time the full extent of the damage resulting from lack of one of these acids, tryptophane, and gives also for the first time concrete evidence that humans as well as laboratory rats require this amino acid.

Human need for another amino acid, arginine, suspected of being a paternity chemical, has previously been reported by Dr. Albanese and associates. (See *SNL*, March 7)

The baldness, cataracts, malformation of tooth enamel and wasting of the male sex glands resulting from lack of tryptophane in the diet were demonstrated in paired feeding experiments with rats. But human volunteers who ate a diet lacking this chemical showed the effects of the deprivation through chemical tests. If they had continued as long on the

diet as the rats did, they would also have grown bald, the scientists believe.

The tooth defects and the cataracts occurred only in young, growing rats on the tryptophane-lacking diet. The baldness and sex gland destruction occurred in both young and old rats. The baldness and the cataracts could be cured

just by adding tryptophane to the diet.

Some of the changes resulting from lack of tryptophane also occur in vitamin A starvation. This may mean that without plenty of tryptophane, the body cannot use vitamin A even if it is present in the diet.

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ENTOMOLOGY

War Endangers Our Trees By Halting Fight on Pests

WAR-COMPELLED suspension of search in Japan for beneficial parasites of the Japanese beetle, and curtailment of domestic insect control plans, seriously jeopardize America's millions of shade trees and their protective camouflage value, warns Dr. E. Porter Felt, director of the Bartlett Tree Research Laboratories, Stamford, Conn.

"Although insect pests annually cause this country about one and one-half billion dollars loss each year, their adequate control is generally an overlooked phase of our war efforts," Dr. Felt stated. "The Japanese beetle, gypsy moth and elm leaf beetle all are more widely distributed today than 40 years ago. Thorough, timely and continuous spraying

is imperative lest their ravages cause widespread defoliation and serious injury to our trees—now more important than ever before because of their morale, health and protective camouflage value during the war emergency."

Limiting the amount of spraying in certain localities to conserve chemicals may be possible, Dr. Felt added, but complete suspension of control operations would be "most unwise." Entomologists and tree experts should be consulted whenever control curtailment is under consideration. Their advice may prevent serious disaster to one of the nation's most valuable physical and esthetic assets—its shade trees.

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PORKY UP A TREE

This bristly creature of northern forests posed on a limb for the portrait that appears on one of the new wildlife stamps. It is a characteristic place for Porky; despite his short legs and deceptive appearance of clumsiness, he's a good climber.