

PYELONEPHRITIS

Increased water intake

Kidney infection often poses a threat to successful childbearing. Antibiotics can relieve the bacterial disease, pyelonephritis, but it is recurrent and difficult to eliminate. If the condition occurs during pregnancy, the risks of miscarriage, prematurity, and prenatal death are increased.

Dr. Vincent T. Andriole of Yale University tested a combination of antibiotics and above-normal fluid intake in rats. He reports that 7 to 14 days of this treatment either prevented or, if established, cured the pyelonephritis. The rats were made to drink up to three times their normal daily intake and, according to the investigator, humans would need an equivalent amount.

Dr. Andriole explains that the medulla, the region of the kidney most susceptible to bacterial infection, becomes more resistant when fluids are forced through it. As the excess fluid is washed out, concentrations of such substances as salt and urea are reduced in the medulla. The body's defending agents, including white blood cells, thus enter the region more easily and attack the bacteria more effectively in conjunction with the antibiotics.

FUNGICIDES

Hamycin undergoes tests

An Indian-made antifungal drug, hamycin, is being reported more effective than other drugs against fungus. Sold in India in liquid form for external application since 1965, hamycin is now undergoing clinical tests in other countries for possible sale in the world market.

The drug was developed by Dr. M. J. Thirumalachari of the Government-owned Hindustan Antibiotics, Ltd. in Pimpri. The drug is now awaiting approval to be marketed in India in capsule form.

Hamycin was recently flown to Buenos Aires to save the life of an Argentine girl who had developed an infection following injuries in a car accident. Although the drug kept her alive for about 10 days, she died of other complications.

One pharmaceutical firm in the United States is already licensed to investigate hamycin. Australian and French firms have also shown interest in manufacturing the drug, and tests are being conducted in Mexico.

SMOKING

New chemical isolated

To respond to stress and exercise, the body needs adequate oxygen in the blood. Normally, hemoglobin in the red blood cells picks up oxygen in the lungs and transports it throughout the body. Carbon monoxide in cigarette smoke interferes with the ability of oxygen to bind with hemoglobin (SN: 11/22, p. 480), but new evidence now shows that another substance, 2,3-DPG (2,3-diphosphoglycerate) found in smokers' blood may be another stress phenomenon on hemoglobin in the blood.

Dr. Robert W. Eliot of the Veterans Administration Hospital in Gainesville, Fla., says the chemical normally builds up in the hemoglobin of red blood cells under

conditions of hypoxia, when the amount of oxygen is lowered in the tissues, as a result of smoking. DPG levels are elevated a half hour after a person starts smoking and become chronically elevated as long as the smoking is continued. Although the exact mechanism of how DPG is synthesized is not known, Dr. Eliot believes carbon monoxide plays a role in its synthesis.

Studies show that DPG remains in the blood even after the carbon monoxide has been removed, and that it may enhance or interfere with the release of oxygen. Whether this is a compensatory factor or another stress phenomenon has yet to be determined.

Dr. Eliot stresses that although hemoglobin abnormality can disappear if a person under 40 quits smoking, in aging persons, the level of DPG in hemoglobin builds up.

HYPOTHYROIDISM

Hormone administered weekly

Hypothyroidism, or underactive thyroid, is a permanent condition requiring medication throughout life. Heretofore, the generally accepted treatment was a thyroid gland preparation taken daily to maintain normal metabolism.

Because some hypothyroid patients neglected to take their daily medication, Dr. Jacob Robbins of the National Institute of Arthritis and Metabolic Diseases in Bethesda, Md., explored the possibility of managing the condition through once-a-week administration of thyroxine, a long-acting synthetic thyroid hormone.

Selected patients were maintained on daily doses of 0.3 milligrams of thyroxine and then on single weekly doses of 2.0 milligrams for one to three months. Radioactive iodine was completely suppressed one week after the single dose of thyroxine in all patients, and all remained free of symptoms during the therapeutic period.

Dr. Robbins reports the medication was well tolerated.

DENTAL CARIES

Simulated sunlight effective

The number and intensity of cavities has been linked to the absence of natural or simulated sunlight by a team of researchers in Boston.

Drs. Ralph P. Feller and Spencer W. Burney of the Veterans Administration Clinic in Boston report that test hamsters exposed for 12 hours daily to light bulbs approximating natural sunlight had one-fifth as many cavities as those exposed to standard artificial light.

The test involved feeding 30 male golden hamsters a high-carbohydrate diet containing 60 percent sucrose that would tend to induce cavities. Half of the group was exposed for 12 hours daily to fluorescent bulbs approximating the relative ultraviolet component of natural sunlight, while half was exposed to standard bulbs.

The physicians report that in the group under the ultraviolet treatment, there was an average of 2.2 teeth with caries, while those exposed to standard bulbs averaged 10.9 cavities each.

The artificial sunlight also had an effect on sexual maturity, the researchers report. Gonadal development was only one-fifth as great in those hamsters under conventional bulbs as those under ultraviolet bulbs.