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Fairleigh Dickinson University scientists who found a drug partially effective against lung cancer in mice, observe one of their "patients." From left to right are Dr. William E. Smith, Mrs. Elizabeth Cutler and Mrs. Doras Hubert.

Experimenter links cancer, asbestos dust

By A. WAYNE BEISSERT

MADISON — Using asbestos dust, a team of Fairleigh Dickinson University scientists has been able to cause lung cancer in hamsters and in the process has found a virus drug that is a partially-effective anti-cancer drug.

Experimenting on lung cancer caused by industrial dusts, the team has successfully used a drug to retard certain interior lung cancers caused by asbestos, but has been unable to stop mesothelioma, a rare tumor forming on the outside of the lung.

THE DRUG, Poly I:C, developed by Merck Corp. as an anti-virus drug, is a synthetic RNA. RNA is a component of all living cells and plays important roles in cell growth.

Dr. William E. Smith of Far Hills, who heads the three-member team, says that in addition to the anti-cancer drug, the experiments have uncovered two major findings:

—Mesothelioma can be controlled if asbestos dust is kept below certain levels, thus disputing a theory developed in South Africa that residents near an asbestos plant are as susceptible to the cancers as the plant workers.

—Asbestos plant workers who smoke are much more likely to develop lung cancer than their non-smoking fellow workers.

DR. SMITH says that only minor tumors in the upper respiratory system developed when asbestos dust was fed into the windpipes of mice. However, when the dust was mixed with benzpyrene, a compound common in cigarette smoke, major tumors developed in the lungs.

Apparently, says Dr. Smith, the BP compound in cigarette

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smoke retained the asbestos dust long enough in the lungs to cause the cancer.

Mesothelioma was caused in the hamsters by injecting asbestos particles into the pleura, the chest cavity surrounding the lungs.

Large and medium doses, says Dr. Smith, always caused mesothelioma tumors to form on the outside of the lungs but small doses resulted in no tumors despite the fact that the asbestos dust could still be found in the pleura when the animal later died.

"THE DATA SHOWS," says Dr. Smith, "that a reduction in exposure to asbestos dust offers a way to control mesothelioma. If the plant controls its environment, the hazard to the workers will be reduced."

Asbestos plants in Central Jersey include Johns-Manville Corp. in Manville, GAF Corp. in South Bound Brook and National Gypsum Co. in Millington.

The experiments, says Dr. Smith, were originally started to determine the causitive factor of industrial dusts on lung cancer and the finding of the anti-cancer drug was an unintended result.

"Poly I:C (administered by injection) gave about .50 per cent inhibition of growth of two interior lung cancers induced by asbestos," says Dr. Smith, "but no inhibition of fast or slow-growing mesthelioma."

IN AN INTERIOR lung cancer induced by injections of the hydrocarbon MCA, a laboratory compound to which humans are not normally exposed, the Poly I:C "almost melted away" the tumor, says Dr. Smith.

"The activity of this drug against some of our tumors might be trying to tell us that a virus is involved in some kinds of lung cancer," says Dr. Smith. "We are exploring that possibility."

The Fairleigh Dickinson team developed the ability to induce lung cancer in mice and hamsters with injections of asbestos at almost the same time a doctor in Wales was developing the same thing in rats.

"I believe our mice and hamsters have the only transplantable asbestos-induced lung cancers and mesotheliomas available for experiments anywhere in the world," says Dr. Smith. "Perhaps they can help detect drugs for treatment of such tumors."

Dr. Smith warns that the interior cancers grown in his experiments are not to be confused with asbestosis, a scarring of the lungs by asbestos fibers that is not malignant.

ASBESTOSIS is considered an occupational disease among asbestos workers and is akin to coal miners' "black lung." The two interior lung cancers used in Dr. Smith's experiments are squamous cell carcinoma, a flat skinlike cell, and adenocarcinoma, a cell similar to those lining the windpipe.

Dr. Smith and the other members of his team, Mrs. Elizabeth Cutler and Mrs. Doras Hubert, will report on the anti-cancer drug at a meeting tomorrow of the American Association for Cancer Research in Chicago.

Their work at the university's Health Research Institute, of which Dr. Smith is director, was funded with grants from the U.S. Public Health Service, the Fannie E. Rippel Foundation of Newark and the Environmental Sciences Laboratory of Mt. Sinai School of Medicine, N.Y.

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