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# NEWS

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\*\*\*\*\*Texas researcher may have vaccine  
for cholera and turista.

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STOCKHOLM--A Texas scientist said today he believes his laboratory has isolated a bacterial mutant which may be successful in immunizing against cholera and a number of other diarrheal diseases.

Dr. Richard A. Finkelstein, professor of Microbiology at The University of Texas Health Science Center at Dallas and a world authority on cholera, made the announcement during a Nobel Symposium here.

The Dallas researcher said he is hopeful human trials will verify laboratory results. For some time now he and associates have tried to induce genetic changes in the cholera bacterium (called a vibrio) so that it would produce a harmless toxin, yet immunize against the virulent form of the disease.

Now, Dr. Takeshi Honda, a fellow in Dr. Finkelstein's laboratory, has succeeded in isolating a mutation of cholera the Dallas group has named "Texas Star." In animal experiments Texas Star produced no diarrhea yet caused formation of antibodies which neutralized toxins produced by *E. coli* and cholera, said Dr. Finkelstein. The new mutant may also be a weapon against "turista."

"Human trials could start at any time," he added.

Cholera is a disease of violent vomiting and diarrhea which is prevalent in third-world countries today and which has been responsible for deaths of countless persons through seven great world-wide epidemics.

Dr. Finkelstein notes: "Since 1961, the 'Seventh Great Pandemic' of cholera has raged worldwide. It was widely seeded in Africa and invaded Europe for the first time in this century. There are occasional imported cases in the Western Hemisphere and even one in Texas in 1973."

The Texas scientist has tried before to produce an immunizing strain of the vibrio.

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"We previously isolated a strain called M-13 which produced little--if any--cholera toxin. Harmless in animals, it was tested on human volunteers at the University of Maryland where it induced resistance to challenge by virulent cholera," said Dr. Finkelstein. Unfortunately, the M-13 recipients were not as solidly immune as volunteers who had undergone actual cases of cholera. Also, the earlier mutant, since it didn't produce antitoxic immunity, would have no protective effects against diarrhea with the exception of cholera.

Other methods of immunization have been tried in field studies in Bangladesh and the Philippines but they were generally unsatisfactory and gave little or no protection.

The cholera vibrio--a curved rod shaped organism which sticks tightly to the lining of the upper bowel--secretes a toxin which activates cells of the lining to produce cyclic AMP, an important regulator of many bodily functions, including intestinal secretion of salts and water. The victim rapidly dehydrates as up to 20 liters of water are lost per day.

"The toxin itself consists of two domains," says Dr. Finkelstein, who was first to isolate it, crystallize it and identify some of the toxin's components. The scientists dubbed the domains "A" and "B".

"The A region is the active portion. It does the business of activating the AMP while the B region is responsible for binding to the cells of the gut lining," he said.

The people in the health science center laboratory worked at screening more than 50,000 cholera mutants and it was Honda, visiting from the Research Institute of Microbial Diseases at Osaka, who came up with the mutant which produced a toxin possessing only a B region. Without the active A region, the mutant and its "toxin" cause no diarrhea.

The Dallas scientists have induced yet another mutation which will readily differentiate Texas Star from ordinary cholera strains.

Possibly of more importance than its ability to protect against cholera, a new vaccine of this type may block some of the world's most debilitating diarrheal diseases. These ailments as a whole may be responsible for more annual deaths than cholera.

Finally, a vaccine against one or more forms of "turista" might be expected to have a profound economic impact.

The reason for such broad based immunity is that many of these diarrheal diseases are closely related, said Dr. Finkelstein, whose work has been supported by the National Institutes of Health.

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