

Can Milk Help Prevent Transplant Rejections?

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(PhysOrg.com) -- Could Wisconsin's signature product – milk – hold the key to one of the biggest problems in organ transplantation?

Dr. Hans Sollinger, the surgeon who heads the transplant program at UW Hospital and Clinics, is betting on it.

Sollinger recently received FDA approval for a clinical trial testing whether the milk of genetically engineered cows can prevent the rejection of transplanted kidneys.

Each year, thousands of kidney transplants fail because of antibody-mediated rejection (AMR), a phenomenon in which a patient's immune system triggers the production of antibodies that in turn activate a

protein called human C1. The protein attacks the transplanted kidney, a process that often leads to the body rejecting the organ

But C1 inhibitor may be able to disrupt the chain reaction that causes AMR. Cows can be genetically engineered to produce milk teeming with the inhibitor.

In the clinical trial, surgeons will identify patients with AMR following a kidney transplant. Half of the trial group will receive the current standard treatment - a blood-cleansing procedure called plasmapheresis - while the other half will receive both plasmapheresis and a course of recombinant C1 from cows' milk.

"A transplant typically rejects one of two ways - either by immune cells or by antibodies," explains Sollinger. "We can combat the immune-cell reaction with cyclosporin and other immunosuppressant agents. Where we are not good is combating antibodies. There's nothing we can do except for washing the antibodies out of the blood, but it's a very time-consuming and expensive process, and most of the time the effects are very short-lasting."

Sollinger's hopes for success are bolstered by medical precedent. Boosting the levels of human C1 inhibitor has been shown in clinical trials to combat a rare disease called hereditary angioedema, a condition in which antibodies trigger swelling and lesions of the skin and mucous membranes.

The trial builds on the work of Dr. Paul Terasaki, the famous transplant surgeon who championed the theory that antibodies, not immune cells, hold the key to preventing organ rejection.

"Dr. Terasaki showed us that in the long term, the grafts that are failing are failing because of antibodies," says Sollinger. "They're a huge

problem, and now, for the first time, we have an agent to address it."

The trial is sponsored by and will be conducted in conjunction with Pharming, a European-based biotech company. Sollinger hopes to have results in as little as a year.

"That's why this trial is so exciting," he says. "This is not one of these drugs where we'll have to wait for years to see if it works. We'll know right away."

The transplant program at UW Hospital and Clinics is one of the world's foremost transplant programs, encompassing heart, lung, kidney, pancreas, intestine, islet cell and pediatric transplants. UW Health surgeons and physicians are recognized as experts and pioneers in new surgical techniques.

Provided by University of Wisconsin

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