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News Release

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Immunity study signals new ways to treat liver failure

Patients with liver failure could benefit from a treatment that helps the immune system to combat infections linked to the condition, research suggests.

A study in mice has revealed that treatment with an immune-boosting molecule called CSF-1 helps to trigger the body's natural defence mechanisms in the liver.

Researchers say that if the therapy proves successful in patients, it could help those who are unsuitable for a liver transplant.

Patients with liver failure are highly prone to serious infections that can lead to sepsis, a potentially life-threatening condition in which the body's immune system goes into overdrive and can make the patients rapidly deteriorate.

Transplantation is currently the only effective treatment for liver failure but is too dangerous for patients with sepsis.

Scientists led by the Medical Research Council Centre for Regenerative Medicine at the University of Edinburgh analysed patients' blood samples for levels of CSF-1.

They noticed that patients with high level of CSF-1 in their blood were more likely to survive than those with the lowest levels.

When they gave CSF-1 to mice with liver damage, they found that the treatment boosted the immune system to clear infections.

CSF-1 is a signalling molecule that recruits cells of the immune system called macrophages, which are part of the body's first line of defence against infections.

Macrophages also help to remove damaged cells and have previously been shown to trigger the liver to repair itself.

Researchers say the treatment could help to boost recovery in cancer patients who have undergone surgery to remove part of their liver. It could also benefit patients with severe liver damage caused by paracetamol overdose.

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The study is published in the journal *Gastroenterology*. It was funded by the Medical Research Council, the Biotechnology and Biological Sciences Research Council, the UK Regenerative Medicine Platform and the Wellcome Trust. Scientists at The Roslin Institute were involved in the research and provided the CSF-1 that was used in the study.

Professor Stuart Forbes, of the MRC Centre for Regenerative Medicine at the University of Edinburgh, said: “Severe infections are common in patients with liver failure and are often fatal. Our next step is to test whether the treatment is safe and effective in people, before it can be made available for patients with liver failure.”

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