

# Cellular target may aid in drug therapies for acute liver failure

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(Medical Xpress) -- New insights into the biological mechanisms that contribute to acute liver failure could help scientists better understand—and eventually treat—a broader spectrum of liver diseases, according to University of Cincinnati (UC) researchers.

In a preclinical study of acute [liver failure](#), UC cancer and cell biology researchers evaluated the role of a specific cell receptor—known as Ron receptor tyrosine kinase—in an effort to better understand the cascade of events that lead to the condition.

The Ron receptor tyrosine kinase is a protein on the cell surface used to activate specific body functions. The receptor is found in two main cell types of the liver: hepatocytes, which work to detoxify the body, and macrophages (Kupffer cells), which regulate inflammation.

The team found that "knocking out" the Ron receptor tyrosine kinase in the inflammation-regulating liver cells (Kupffer cells) had a negative impact on liver cell survival and promoted acute liver failure.

Conversely, deleting the same receptor in detoxifying liver cells (hepatocytes) actually had a protective effect, halting the progression of liver failure and enhancing survival.

This new knowledge offers a strong molecular target for drug development efforts aimed at extending the lifespan of patients with acute liver failure, according to the UC researchers.

"We've shown that the liver has a set of dueling forces going on, so if you could generate a drug to selectively target Ron in specific cell types, you might have a larger impact—not only on acute liver failure but also in other areas that might attack the liver and lead to liver injury," explains Susan Waltz, PhD, a professor of cancer and cell biology at the UC College of Medicine and researcher with the UC Cancer Institute. She served as principal investigator of the study.

Waltz and her colleagues report their findings in the May 2011 issue of the scientific journal *Hepatology*.

According to National Institute of Diabetes and Digestive and Kidney Diseases, more than 2,000 people experience acute liver failure each year. Liver transplantation is the only known cure. The condition is most often caused by overuse of acetaminophen—a commonly available over-the-counter medication for pain and fever reduction. People who experience [acute liver failure](#) can die within a few weeks.

"Now we will look at the role of the Ron receptor tyrosine kinase in a broader population of liver diseases (such as fatty liver disease) to see if selectively targeting Ron in [liver cells](#) could yield another cellular target that is beneficial in halting [liver](#) disease," adds Waltz.

Provided by University of Cincinnati

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