ASN LEADING THE FIGHT AGAINST KIDNEY DISEASE

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Press Release

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STUDY PROVIDES INSIGHTS ON ENZYME THAT HELPS DIRECT THE IMMUNE RESPONSE TO KIDNEY INJURY

Findings may lead to better therapies to prevent kidney disease

Highlights

- An enzyme called heme oxygenase-1 (HO-1) affects immune cells as they travel through the body in response to kidney injury.
- In mice, the absence of HO-1 leads to poor recovery after acute kidney injury.

Acute kidney injury is one of the most common and serious complications in hospitalized patients.

Washington, DC (February 12, 2015) — An enzyme known to be important in the body's response to kidney injury exerts its protective effects, in part, by affecting the immune system, according to a study appearing in an upcoming issue of the *Journal of the American Society of Nephrology* (JASN). The findings could lead to new treatments for patients with acute kidney injury (AKI).

AKI is an abrupt decline in kidney function that often arises after major surgeries or severe infections. An enzyme called heme oxygenase-1 (HO-1) is known to be important in the body's protective response to AKI. In their efforts to uncover the specific effects of HO-1 in this response, a team of researchers led by Anupam Agarwal, MD, James F. George, PhD, Travis Hull, BS, and Ahmed Kamal, MD (University of Alabama at Birmingham) found that HO-1 helps to direct a specific subset of immune cells, called myeloid cells, as they traffic to and from the kidney after it is injured.

"This pre-clinical study more completely defines the cellular compartments through which HO-1 exerts its protective effects in AKI, thus paving the way for the development of targeted novel therapeutic strategies aimed at preventing the significant morbidity and mortality caused by AKI in patients," said Dr. Agarwal. "More importantly, our studies discovered that the absence of HO-1 in myeloid cells had a dramatic effect on recovery after AKI, suggesting that HO-1 could be an important target in preventing the transition of AKI to chronic kidney disease."

In an accompanying editorial, Gilbert Kinsey, PharmD, PhD (University of Virginia) noted that the findings significantly advance researchers' understanding of the role of HO-1 following kidney injury. "Given the human relevance of HO-1 in AKI and the growing

understanding of the myeloid cells in renal health and disease, these studies by Hull *et al.* provide the foundation for a whole new area of AKI research," he wrote.

Study co-authors include Ravindra Boddu, PhD, DDS, Subhashini Bolisetty, PhD, Lingling Guo, MD, Cornelia Tisher, BS, Sunil Rangarajan, MD, Bo Chen, MD, and Lisa Curtis, PhD.

Disclosures: The authors reported no financial disclosures.

The article, entitled "Heme Oxygenase-1 Regulates Myeloid Cell Trafficking in AKI," will appear online at http://jasn.asnjournals.org/ on February 12, 2015.

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Founded in 1966, and with more than 15,000 members, the American Society of Nephrology (ASN) leads the fight against kidney disease by educating health professionals, sharing new knowledge, advancing research, and advocating the highest quality care for patients.

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