A group of researchers has succeeded in containing the symptoms of acute renal failure in mice by transplanting renal precursor cells made from human induced pluripotent stem cells, or iPSCs, into the animals.

The achievement by the team of scientists, including from Kyoto University's Center for iPS Cell Research and Application, or CiRA, and Astellas Pharma Inc., found this method could also be effective in easing acute renal failure in human patients, according to findings published Tuesday in the online edition of U.S. science journal Stem Cells Translational Medicine on Tuesday.

In acute renal failure, kidney function deteriorates rapidly over several hours to several days due to a lack of blood or side effects of drugs. In Japan, about 5 percent of inpatients develop acute renal failure, and more than half of them die. Even survivors' kidneys can be seriously damaged, and the disease can become chronic.

The group, including Kenji Osafune, professor at CiRA, developed a method to stably produce, from human iPS cells, renal precursor cells that only embryos have.

After the precursor cells were transplanted into mice, the team confirmed a decline in the levels of serum creatinine, a substance that increases in volume when kidney functions deteriorate. Necrosis and fibrosis of kidney cells in the mice were also contained, according to the team.

Osafune said that nutritional factors secreted from the transplanted human renal precursor cells helped ease the symptoms. This therapy could be effective also in the treatment of chronic kidney disease patients, totaling more than 13 million in Japan, he said.

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