

# Stem cells decrease ischemic injury and restore brain function

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This is the impressive result of a study carried out by a group of researchers coordinated by Dr. Maria Grazia De Simoni of the Mario Negri Institute in Milan, Italy in cooperation with the Istituto Neurologico Besta (Milan) and the University of Lausanne. The study appears in the April 18th issue of the international, peer-reviewed, open-access online journal of the Public Library of Science, PLoS ONE.

Stroke is the first cause of permanent invalidity and the third cause of death in industrialized countries.

Despite the recent advancements in the management of ischemic patients (early diagnosis, thrombolysis, stroke units and rehabilitation centers), stroke still represents a major and unresolved medical issue.

"Stroke causes the death of many nervous cells that, in theory, could be substituted by stem cells. A few studies have shown that these cells can be effective, although various issues about their use and the mechanisms of their protective action remained unsolved," says Maria Grazia De Simoni.

"Our research has underlined a possible mechanism of action. Once introduced in the area of the brain hit by a stroke, stem cells induce the development of a protective effect in this same area," explains De Simoni. "Therefore, it is not necessary, as proposed in past studies, for stem cells to turn into neurons in order to protect the brain from ischemic injury and restore brain functions. Their presence in brain

tissue is sufficient to induce a protective reaction."

Various cells are involved in this reaction, among which the microglia, which has always been thought to have a toxic and inflammatory role. "Instead, we suggest that the microglia also has a protective function," says De Simoni. "Moreover our research shows that these cells survive in brain tissue only for a few days and then they are eliminated. This is very important given the possibility that stem cells may turn into cancer cells."

Source: Public Library of Science

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