Newly discovered molecule may offer hope for immune disorders and runaway inflammation

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A new research discovery published in the April 2014 issue of the *Journal of Leukocyte Biology* may open the door to new therapies that help treat immune disorders or curb runaway inflammation. Specifically, scientists have discovered a molecule that can induce cell death (apoptosis) in a key type of immune cell (dendritic cells). With this understanding, it may be possible to develop new therapies that essentially shut down dendritic cell activity, and thereby reducing an immune reaction.

"We hope that our findings provide better understanding of immune regulation, which might give new insights into identifying new targets for immunotherapies,'" said Young Chul Sung, Ph.D., a researcher involved in the work from the Division of Integrative Bioscience and Biotechnology at the Pohang University of Science and Technology in Pohang, Korea.

To make this discovery, scientists used two groups of mice. One group was bred to lack the molecule believed to induce dendritic cell apoptosis and the second were normal (wild-type). Dendritic cells, obtained from the spleens of both groups of mice, were activated in vivo and in vitro, and apoptosis was determined by flow cytometry. Significantly lower apoptosis was found in the mice lacking the molecule necessary to induce apoptosis, when compared to their counterparts

"Dendritic cells are the essential inducers of immune responses and sense the need to activate many other immune cascades, but sometimes these cells get it wrong," said John Wherry, Ph.D., Deputy Editor of the *Journal of Leukocyte Biology*. "Understanding how one might selectively induce cell death in dendritic cells may reveal novel opportunities to eliminate these key orchestrators of immune responses in pathogenic settings such as autoimmunity or inflammatory diseases."

More information: Seong Jeong Park, Hong Namkoong, Junsang Doh, Jong-Cheol Choi, Bo-Gie Yang, Yunji Park, and Young Chul Sung. Negative role of inducible PD-1 on survival of activated dendritic cells. *J. Leukoc. Biol.* April 2014 95:621-629; DOI: 10.1189/jlb.0813443

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