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Olive oil component alleviates intestinal ischemia and reperfusion

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Here's another reason why you should include olive oil in your diet: A new research report published in the *Journal of Leukocyte Biology* suggests that at least one compound in olive oil significantly reduces intestinal ischemia (restricted blood supply) and the resulting reperfusion injury (tissue damage caused when blood supply returns). The compound, called "oleuropein aglycone," is the most prominent polyphenol found in olive oil and could become a novel therapeutic target aimed at treating intestinal ischemia and reperfusion injury in humans. Ultimately, this research could lead to therapeutic benefits for patients with spinal cord injuries, arthritis and pleurisy, as well as those suffering from intestinal ischemia/reperfusion.

"The phenolic compounds of olive oil can reduce the secondary injury associated with intestinal damage," said Salvatore Cuzzocrea, Ph.D., a senior researcher involved in the work from the Department of Biology and Environmental Sciences at the University of Messina in Messina, Italy. "Oleuropein aglycone may be useful in the therapy of inflammation-associated disease."

To make this discovery, scientists used four groups of mice. The first group was subjected to intestinal ischemia by splanchnic arterial occlusion (SAO) followed by reperfusion. The second group was the same as the first but was also administered oleuropein aglycone. The third group of mice underwent identical surgical procedures except for SAO shock and was kept under anesthesia for the duration of the experiment. The last group was the same as the third, but was also given

oleuropein aglycone. The histological structure of the gastrointestinal tract from the third group was typical of a normal architecture, but did not present any early inflammation. The ileum from animals subjected to intestinal ischemia/reperfusion injury (IRI) showed severe histological alteration with edema of the distal portion of the villi and the expression of pro-inflammatory cytokines, apoptosis and neutrophil infiltration were significantly increased. Oleuropein aglycone treated-mice showed reduced IRI-induced organ injury including a considerable reduction of inflammatory and apoptotic levels.

"Olive oil's healing properties have been known for millennia," said John Wherry, Ph.D., Deputy Editor of the Journal of Leukocyte Biology, "but until relatively recently, we have had few direct scientific insights into exactly how it works in the body. Not only does this report shed light on the molecular details of how olive oil may provide health benefits, but it may open new doors to enhancing treatments based on this discovery."

More information: Michela Campolo, Rosanna Di Paola, Daniela Impellizzeri, Rosalia Crupi, Valeria Maria Morittu, Antonio Procopio, Enzo Perri, Domenico Britti, Angelo Peli, Emanuela Esposito, and Salvatore Cuzzocrea. Effects of a polyphenol present in olive oil, oleuropein aglycone, in a murine model of intestinal ischemia/reperfusion injury. *J. Leukoc. Biol.* February 2013 93:277-287; doi:10.1189/jlb.0712317

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