

Researchers create compound that boosts anti-inflammatory fat levels

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UC Irvine pharmacology researchers have discovered a way to boost levels of a natural body fat that helps decrease inflammation, pointing to possible new treatments for allergies, illnesses and injuries related to the immune system.

For decades, it has been known that this fat, called palmitoylethanolamide (PEA), is a potent anti-inflammatory substance that reduces both allergic symptoms and occurrences of rheumatic fever, but researchers understood little about how PEA works.

In a study appearing online in the <u>Proceedings of the National Academy</u> <u>of Sciences</u>, Daniele Piomelli, the Louise Turner Arnold Chair in Neurosciences at UCI, and colleagues found that levels of PEA are tightly regulated by <u>immune system cells</u>. In turn, PEA helps control the activity of these cells, which are called into action to fight infection, disease and injury in the body.

In addition, they found that PEA - also present in foods like eggs and peanuts - is deactivated by a protein called N-acylethanolaminehydrolyzing acid amidase, which is an enzyme that breaks down molecules controlling cell inflammation.

Using a combination of molecular modeling and chemical library screening, the researchers created a novel compound that blocks the action of this protein.



When given to rodents, the compound increased the levels of PEA in their immune cells and reduced the amount of inflammation elicited by an inflammatory substance. Furthermore, when administered to the spinal cords of mice after <u>spinal cord</u> injury, the compound decreased inflammation associated with the trauma and improved the recovery of motor function.

"These findings are very exciting for the field of medicine because most drugs for inflammatory conditions are effective in only a portion of the population and have serious side effects," Piomelli says. "This compound shows wide-scale promise."

He adds that the PEA-boosting compound is a prime candidate for development into a range of immune-response drugs. This possibility will be explored through a research collaboration between UCI and the Italian Institute of Technology in Genoa.

Source: University of California - Irvine

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