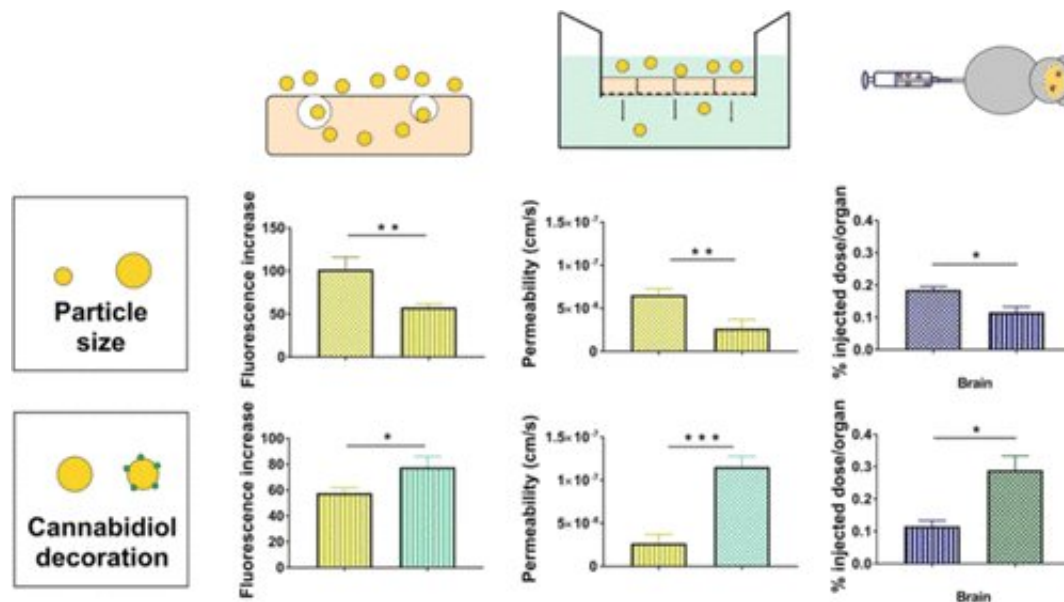


Cannabidiol could help deliver medications to the brain

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Credit: American Chemical Society

Cannabidiol (CBD), a non-psychoactive compound in cannabis, is being touted as beneficial for many health conditions, ranging from anxiety to epilepsy. Although much more research is needed to verify these claims, scientists have now shown that CBD could have a different use as a "Trojan horse": helping slip medications across the blood-brain barrier (BBB) and into mouse brains. The researchers report their results in the ACS journal *Molecular Pharmaceutics*.

The BBB consists of a layer of tightly linked cells that line capillaries in

the brain, preventing substances from exiting the blood and entering the brain. However, the BBB does permit some molecules to pass, such as glucose and certain amino acids and neurotransmitters. For example, a class of neurotransmitters called endocannabinoids bind to proteins called [cannabinoid receptors](#) in the BBB, and the receptors help transport the molecules across the barrier and into the brain. Ana Torres-Suárez and colleagues wanted to make use of this system to sneak drug nanocarriers into the brains of mice.

To do so, the researchers attached CBD, which resembles endocannabinoids made by both mice and humans, to the outside surfaces of lipid nanocapsules. Instead of loading the nanocapsules with a medication, the researchers packaged them with a fluorescent molecule so they could track the particles. In experiments with human brain cells that mimic the BBB, the researchers showed that the CBD-displaying nanocarriers caused more of the fluorescent molecule to pass through the cells than nanocarriers of equal size that lacked CBD. Similarly, when injected into healthy mice, the CBD-nanocapsules targeted about 2.5 times more of the fluorescent molecule to the animals' brains.

More information: Juan Aparicio-Blanco et al. Cannabidiol Enhances the Passage of Lipid Nanocapsules across the Blood–Brain Barrier Both in Vitro and in Vivo, *Molecular Pharmaceutics* (2019). [DOI: 10.1021/acs.molpharmaceut.8b01344](#)

Provided by American Chemical Society

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