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Caffeine intake improves heart health

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Judith Haendeler and Joachim Altschmied of the Medical Faculty, Heinrich-Heine-University and the IUF-Leibniz Research Institute for Environmental Medicine in Duesseldorf, Germany, and colleagues, found that the protective effect was reached at a concentration equivalent to consumption of four cups of coffee, suggesting the effect may be physiologically relevant.

The authors have previously shown that at physiologically relevant concentrations (i.e. levels reached after four or more cups of coffee) caffeine improved the functional capacity of endothelial cells, which line the interior of blood vessels, and that the effect involved mitochondria, the cell’s energy powerhouses.

Here, they showed that a protein called p27, known mainly as an inhibitor of the cell cycle, was present in mitochondria in the major cell types of the heart.

In these cells, mitochondrial p27 promoted migration of endothelial cells, protected heart muscle cells from cell death, and triggered the conversion of fibroblasts into cells containing contractile fibers all crucial for repair of heart muscle after myocardial infarction.

They found that caffeine induced the movement of p27 into mitochondria, setting off this beneficial chain of events, and did so at a concentration that is reached in humans by drinking four cups of coffee. Caffeine was protective against heart damage in pre-diabetic, obese mice, and in aged mice.

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