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Vitamin cocktail found to extend youthfulness in mice

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Courtesy McMaster University
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A complex cocktail of ingredients available in many drug stores helps keep mice youthful into old age, judging by their physical activity and other measures, scientists are reporting.

The same cocktail has been associated in past studies with a “modest” extension of mouse lifespan, the researchers said. But their newest study on the cocktail focused on extension of youthful function rather than of lifespan itself.

Cod liver oil (Omega 3)	17.32%
Flax seed oil	17.32%
Bioflavonoids	11.26%
Ginseng	8.962%
Ginger root extract	8.526%
Green tea extract	6.927%
Vitamin C	4.979%
Vitamin E	4.641%
N-acetyl cysteine	4.330%
Rutin	4.330%
Alpha-lipoic acid	2.598%
Acetyl L-carnitine	2.080%
Acetylsalicylic acid	1.876%
Vitamin B6	0.866%
Coenzyme Q10	0.866%
Magnesium	0.649%
Vitamin B1	0.433%
Vitamin B3 (niacin)	0.433%
L-Glutathione	0.433%
Beta carotene	0.312%
Manganese	0.271%
Ginkgo biloba	0.260%
Potassium	0.257%
Garlic	0.054%
Melatonin	0.010%
Folic acid	0.009%
Chromium picolinate	0.004%
Vitamin B12	0.003%
Selenium	0.001%
Vitamin D	0.0003%

The 30 readily available vitamin and supplement ingredients used in the "cocktail" tested on mice. Ingredients are listed along with the nearly exact percentages in which they were included, highest first. Mice received about 70 mg per day of the cocktail. This particular cocktail is not available on the market, although researchers are investigating developing new supplements based on the research. Note that many of these substances are not government regulated and that quality and purity are not always guaranteed with commercially available preparations.

Some other past research has claimed more dramatic life extension in animals fed other substances, perhaps most notably the red wine ingredient [resveratrol](#).

The “cocktail” fed to the mice included vitamins B1, C, D, E, acetylsalicylic acid, beta carotene, folic acid, garlic, ginger root, ginkgo biloba, ginseng, green tea extract, magnesium, melatonin, potassium, cod liver oil, and flax seed oil. The ingredients were combined based on their ability to offset five mechanisms involved in ageing, said the researchers, from McMaster University in Canada.

“Declining physical activity... is one of the most reliable expressions of ageing and is also a good indicator of obesity and general mortality risk,” said McMaster biologist David Rollo, a co-author of

the study, published in the current issue of the research journal *Experimental Biology and Medicine*.

The study found that the cocktail powerfully offsets this key symptom of ageing in old mice by increasing the activity of the cellular furnaces that supply energy—or mitochondria—and by reducing emissions from these furnaces. Called free radicals, these substances are considered by many biologists as the basic cause of ageing.

Most of the primary causes of human mortality and decline are strongly correlated with age and free-radical processes, including heart disease, stroke, Type II diabetes, many cancers, neurodegenerative diseases, and inflammatory and autoimmune conditions, said Rollo and colleagues.

Using bagel bits soaked in the supplement to ensure consistent and accurate dosing, the formula maintained youthful levels of movement into old age, the researchers said. In contrast, old mice that were not given the supplement showed a 50 per cent loss in daily movement, a similar dramatic loss in the activity of the cellular furnaces that make our energy, and declines in brain signaling chemicals relevant to locomotion.

The team had also previously reported that the supplement prevents cognitive declines and protects mice from radiation.

“For ageing humans, maintaining zestful living into later years may provide greater social and economic benefits than simply extending years of likely decrepitude,” Rollo said. “This study obtained a truly remarkable extension of physical function in old mice... This holds great promise for extending the quality of life of 'health span' of humans.” Development of new and hopefully more effective supplements is ongoing, Rollo added.