

# Healthy ageing—longer healthspan with spermidine

September 1 2016, by Mia Malmstedt

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Spermidine cleans the cells and could potentially prolong lifespan. Research is ongoing and some of it is presented by Professor Frank Madeo at the Healthy Ageing conference tomorrow.

Seven questions for Frank Madeo, Professor at the Institute of Molecular Biosciences at the University of Graz, and one of the speaker on the second day of the Healthy Ageing Seminar days.

## What will you talk about at Healthy Ageing?

I will talk about our finding that you can, instead of fasting, have the benefits of fasting by administer the caloric restriction mimetic spermidine.

## Tell us more about this?

In 2009, we discovered that spermidine induces autophagy, a cellular self cleaning process. In autophagy, damaged material that is accumulating during ageing is digested to replenish the energy need of the cell in times of starvation. Thereby also toxic junk is removed, and this explains the age-protective effect. We found that spermidine induces longevity and autophagy in different species, such as flies, worms and yeasts. It also protects against ageassociated diseases like dementia or cancer in model organisms.

## **That's amazing. What did your research results lead to?**

Our finding has led to a "boom" in research. Many other labs are now working to defeat age-associated disease with spermidine administration. This applies to divergent fields, for instance muscle degeneration, age-induced immune dysfunction and [stem cell pluripotency](#) during aging.

## **Where can this take us – are we all to use spermidine in the future? And will we then live "forever"?**

Who knows the future? But what is pretty clear to me is that we will not live forever, for sure. The damage that accumulates in the body is too random and too unpredictable. And in addition: Do we really want to prolong life beyond agony? Wouldn't it be better – and this is a realistic goal – to prolong healthspan? I am quite sure that fasting regimes, or fasting mimicking diets, or fasting mimicking supplements like spermidine, may prolong healthspan in the future. Healthy ageing is probably more dependent on lifestyle than on genes: So – it is possible that we will use these techniques to keep healthy longer.

## **What are the side effects?**

Currently, we do not know any side effects. You can probably overdo it, like with everything. But the moderate supplementation that is used in mice by many research groups in order to defeat age-associated diseases reportedly has no side effects.

## **Has spermidine reached patients – is it used by humans today?**

The first clinical trial, in which we administer a spermidine rich extract from wheat germs to elderly people, is currently ongoing. This is a collaboration between my lab and the Charite/Berlin. Our question is: Will age-associated decline in cognitive function be prevented by spermidine supplementation? The next clinical trial is currently being planned in Padova. They want to study if spermidine can prevent age or disease associated muscle loss.

## **Can I do something myself? Can I eat things that is rich in spermidine to perhaps reach some effects?**

Definitely. It has been reported that consumption of spermidine rich food leads to enhancement of the polyamine – spermidine or spermine – concentration in the blood after three month. So, a change in diet towards spermidine rich food might be effective. High concentrations of [spermidine](#) are for example available in wheat germs, mushrooms, strongly fermented cheese, meat, green salad, and pears.

Provided by Chalmers University of Technology

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