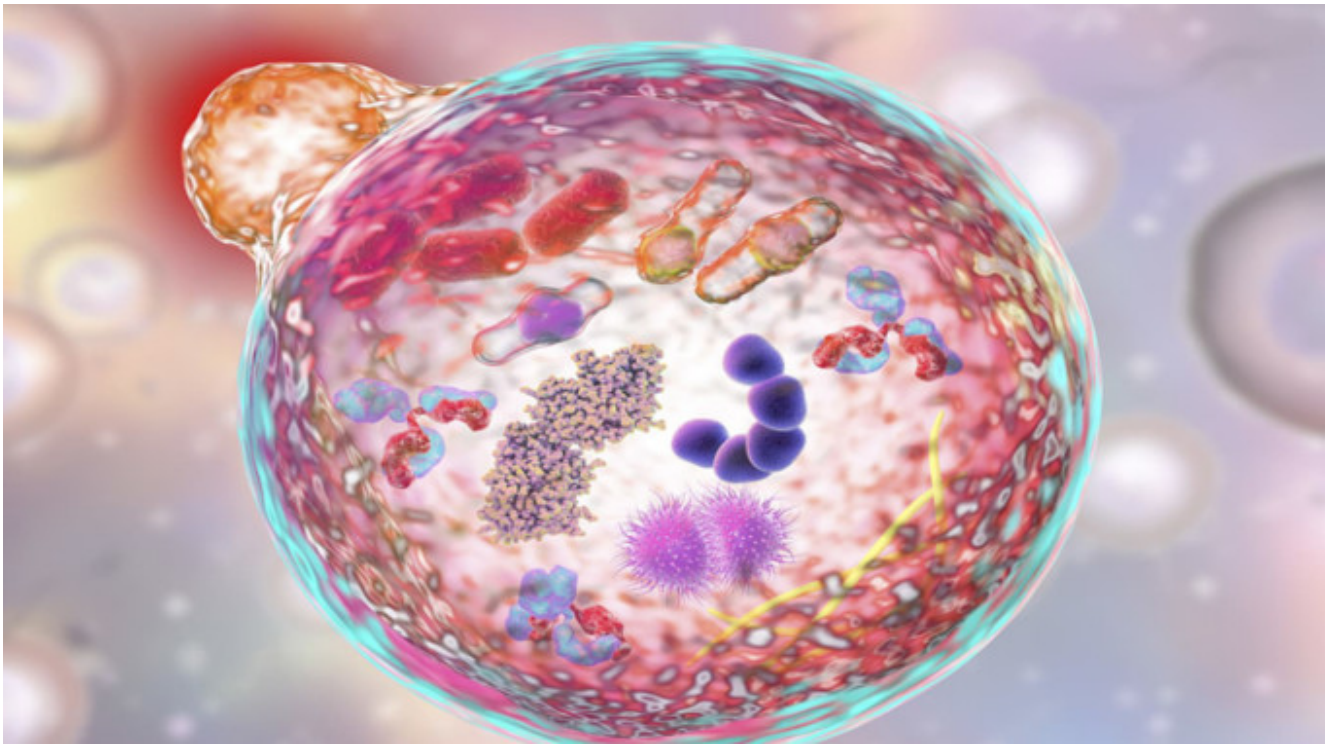
# How to Use Autophagy to Clear Damaged Cells From Your Body And Reduce Inflammation



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By Power Of Positivity

If you were to look up “autophagy” online, you would see that it has become the latest fascination and health cure over the last few years.  It is most commonly associated with one of the benefits of a ketogenic diet and fasting.  Currently, there are many claims to its fame, including extending life, slowing the aging process, and acting as a natural detox to your system.  There is positive scientific evidence to show how you can use autophagy to clear damaged cells from your body and reduce inflammation.

## History of Autophagy's Discovery

Autophagy was first discovered and named by Christian de Duve, a 1974 Nobel laureate. He discovered the lysosome. Upon continued observation of lysosomes, he discovered damaged or unusable material placed into the lysosomes. Therefore, he coined that process autophagy, or "self-eating," and called the cellular transportation vehicles autophagosomes.

In 1988, a gentleman by the name of Yoshinori Ohsumi started his own study related to autophagosomes. During his experiments, he chose to interrupt the process of autophagy in a cell in order to hopefully create a larger gathering of autophagosomes. By doing so, he hoped to be able to view them better under the microscope. The method he chose to do this was by starving the cells, and surprisingly, it worked! Ohsumi discovered a method to identify and characterize key genes involved in autophagy. The results were published in 1992, and in 2016, he was awarded the Nobel Prize in physiology.

## Definition of Autophagy and Its 3 Types

As stated above, autophagy is Greek for "self-eating." Simply put, it is defined as the process in which misfolded proteins, damaged organelles, and pathogens are transferred into lysosomes to be broken down and then recycled for cellular use – similar to how we collect plastic bottles, smash them down, and then re-create other plastic materials.

There are 3 types of autophagy:

1) *Macro-autophagy* – delivers cellular "garbage" to the lysosome by an autophagosome and then fuses with the lysosome to create an autolysosome.

2) *Micro-autophagy* – the lysosome itself absorbs the damaged cells.

3) *Chaperone-mediated autophagy* – the degraded

cellular material essentially rides “piggyback” on a protein which the lysosome receptors recognize and then that protein is unfolded and degraded.

## Can autophagy help clear damaged cells from your body?

The role of autophagy in our bodies helps maintain the homeostasis of our cells.  We have various amino acids and proteins which act as fuel for our cells.  Some of those proteins don’t develop as they should or get used and discarded by our organs.  The process of autophagy causes our lysosomes to absorb these organelles and proteins; they then break them down and convert them into usable cells for our body once again.

Most studies regarding this process were performed while starving the cells – literally.  The subject’s body did not receive food for 24-48 hours.  This creates both a further breakdown of protein cells and an increase in amino acids which then cause the cells to group together faster while elongating and enlarging.  This makes it easier for the lysosomes to absorb and recycle.

We must remember that we are only as healthy as our cells are.  By starving the cells, they kick into survival mode by attempting to create more food through amino acids in order to ensure our tissues and organs remain operational.  At the same time, they cannot allow this sudden abundance of “bad cells” to remain in our body and therefore must attach themselves to lysosomes in order to rid the body of this excess – much like we do not allow trash to accumulate in our homes for an extended period of time.

## Methods to induce autophagy

- Fasting and intermittent fasting:

We naturally fast on a daily basis from the time we eat dinner until we eat breakfast the next morning. This assumes, of course, that you aren't getting up to eat or snacking prior to sleep. If you eat dinner by 6 and then don't eat breakfast until about 7 – 8 a.m., then you have fasted for 13-14 hours. While most studies were done on subjects who fasted for 24-48 hours, results manifest in 14-16 hours. Scientists have also stated that fasting for 2-5 days or reducing calorie intake has shown to trigger autophagy.

- **Exercise:**

Exercising is another way scientists theorize that autophagy can be triggered. This is still being studied. Scientists believe that autophagy is the reason behind all the chemical benefits that occur in your body after exercising. There exists evidence of increased life span and protection against cardiovascular diseases, diabetes, cancer, and neurodegenerative diseases. These benefits mirror the results scientists are seeing in their studies about autophagy. Additionally, they discovered **increased cognitive function in the cerebral cortex** due to increased activity of autophagy after exercise.

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