

Autophagy and Fasting

Although the term “autophagy” was first proposed in 1963 by a Belgian biochemist “Christian de Duve”, the fundamental empirical understanding of the concept was presented in 2016 by a Japanese cell biologist Dr. Yoshinori Ohsumi and for his work he was awarded Nobel Prize in Physiology or Medicine. So what is autophagy and why it has such significance?

The term “Autophagy” is derived from ancient Greek, the dictionary meaning of which is “Self-devouring”. Technically speaking it involves the natural process of the cell through which the worn out and dysfunctional parts are consumed, repaired and maintenance is undertaken. In other words, it triggers and systematic degradation and refurbishment process of cellular parts.

To understand autophagy, one first needs to understand the lifecycle and functions of cells. It is understood that cell in a healthy body wear out and become dysfunctional after a certain period of time due to normal and regular metabolic processes. With the passage of time, the health and longevity of a body is depleted or damaged due to free radical or oxidative damage, and cells are exposed to an increased rate of deterioration. Now here is the critical part; if these senescent or elderly cells are not gotten rid of, since they are unable to perform any function, these can cause inflammatory pathways and lead to a number of diseases. During autophagy, the body consumes its own tissues (or senescent or worn out cell) as metabolic process – decompose the waste parts in vacuoles/spaces of the cells and reutilize it to rebuild and renew the cells. In simplest terms autophagy is a cleanup operation of the body that consequently helps in defending against diseases like cancer, neuro-degeneration, cardiomyopathy, diabetes, liver disease, autoimmune diseases and infections.¹

It is to be noted that the understanding of autophagy process is at early stages and still a lot more to be unearthed. Since one of the most effective methods to trigger autophagy is fasting refraining oneself from eating or drinking for a certain period of time. Being Muslim, we practice fasting as one of the five fundamental pillars of Islam, the responsibility falls on our shoulders more than anybody else, to do further research in understanding this concept for greater good.

Reference:

- 1- Glick D, Barth S, Macleod KF. Autophagy: cellular and molecular mechanisms. The Journal of Pathology. 2010 May;221(1):3-12.

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