

Putrescine water may be Fountain of Youth for eggs

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An Ottawa scientist has discovered a critical reason why women experience fertility problems as they get older. The breakthrough by Dr. Johné Liu, a senior scientist at the Ottawa Hospital Research Institute and professor at the University of Ottawa, also points to a simple solution that could increase the viability of egg cells for women in their late 30s and older—putrescine water.

In an online editorial published by *Aging* based on his recently published findings, Liu outlines how a simple program of drinking water or taking a pill that contains the naturally occurring compound putrescine could reduce the rate at which middle-aged women produce eggs with the incorrect number of chromosomes, the leading cause of reduced fertility and increases in [miscarriages](#) and congenital birth defects.

Putrescine is naturally produced in mammals by an enzyme called ornithine decarboxylase, or ODC, and is easily absorbed and cleared by the body. In female mammals, ODC levels are known to rise during ovulation, when the egg cell matures and is released from the [ovary](#). Dr. Liu has shown that ODC levels rise very little in older females. He has also shown that inhibiting ODC levels in young mice leads to an increase in egg cells with chromosomal defects.

Taking this a step further, Dr. Liu's team gave older mice putrescine water in the period immediately leading up to and during [ovulation](#), and found that it reduced the incidence of defective eggs by more than 50%.

This is a remarkable outcome for such a simple approach," says Dr. Liu. "However, we could not have imagined this without first understanding the role that ODC and putrescine play in maintaining the chromosomal integrity of [egg cells](#). While there is work to be done before it can be approved for clinical use, we feel this approach could be used for natural conception as well as in vitro fertilization."

Although promising, a putrescine pill is still a long way from being available on the market. Putrescine is toxic to the fetus if it is administered after conception, which makes timing, dosage and monitoring critical. Accordingly, this approach must go through the appropriate stages of testing to determine its clinical safety and effectiveness in humans.

More information: The full paper, "Deficiency of ovarian ornithine decarboxylase contributes to aging-related egg aneuploidy in mice," was recently accepted for publication online ahead of print by *Aging Cell*. The editorial was published online by *Aging* on November 23.

Provided by Ottawa Hospital Research Institute

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