Can we slow down the ovarian aging process?

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It was demonstrated that double-strand break (DSBs) accumulate in primordial follicles with age, whereas on the other site the expression of key DNA DSB repair genes such as BRCA1 declines also human oocytes. In Brca1-deficient mice, reproductive capacity was impaired, primordial follicle counts were lower, and DSBs were increased in remaining follicles with age relative to wild-type mice. In eggs from healthy women of different ages, several DNA repair genes like BRCA1 also lost expression over time. This suggested that the ability of eggs to repair their DNA worsened with age, although it isn't prove at the moment. that faulty DNA repair is really the reason for the die-off of older eggs. Nevertheless studies are going on, to investigate the BRCA 1 enhancing und free radical reducing effect in the ovaries, avoiding the ovarien DSB procedure.

One candidate is the reduced form of PQQ, a potent antioxidant and capable of catalyzing continuous and repeated oxidation and reduction reactions in chemical assays. Accordingly, it is noteworthy that PQQ supplementation reduced CRP levels by ~45%.

During female reproductive life, ovarian follicle reserve is reduced by maturation and atresia until menopause ensues. Foxo3 is required to maintain the ovarian reserve in mice. It was also published, that overexpression of constitutively active FOXO3 can increase ovarian reproductive capacity in mice. An increased follicle numbers and decreased gonadotropin levels in aging FOXO3-transgenic mice compared with wild-type littermates was demonstrated, suggesting maintenance of a greater ovarian reserve.

FOXO3 enhancing could function as a protection of primordial follicle activation in oocytes and could preserves oocyte quiescence and thus the duration of female fertility.

MyoInositol (MI) plays a crucial role at ovarian level. Recently, it was reported that high concentrations of MI positively correlate with high quality and mature oocytes and a recent review clearly summarized the important role of MI in human reproduction. Furthermore, MI supplementation during IVF protocols has been shown to improve oocyte quality and reduce the number of IU of FSH necessary for ovarian stimulation. Therefor, MI could become also a candidate for slowing down the ovarian aging.