

## Hyperbaric Oxygen plus Metformin, Vitamin D<sub>3</sub>, and Omega-3 Supplement to Slow Down Aging Process

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### Abstract:

Aging is defined as multiple injurious changes in the cells and tissues occurring as the human being grows old with age or becomes senescent. Hyperbaricoxygen with Metformin, vitamin D<sub>3</sub>, and Omega-3 supplements may help in delaying the aging process. The available evidence seems to suggest that hyperbaric oxygen therapy (HOT), metformin, vitamin D<sub>3</sub>, and Omega-3 fatty acids may delay the aging process.

It is concluded it is better to give (males over the age of 45 and females over 35) six sessions of HOT plus a daily dose of 250-750 mg of Metformin plus vitamin D<sub>3</sub>, 2500-7500 IU with omega-3 250-750 units for 2 months yearly, for life. This will help in the reduction of the aging process and will help in improving well beings.

### 1. INTRODUCTION

The aging process is defined as multiple injurious or harmful changes in the cells and tissues occurring as the human being grows up with the age or becomes senescent [1,2]. The life expectancy of a human is the maximum number of years that can live, which has remained unchanged for the last one hundred thousand years (at 125 years). Life expectancy has raised to 77 years throughout the past century particularly in the west because of the elimination of different infection diseases, good hygiene, and the presence of antibiotics and other drugs [3]. The increased life span is seen through the raised population of older ages in the world [4,5]. So many theories (around 300 theories) tried to explain aging [6]. The theory of aging related to free radicals might be the most adopted one [7].

Studies have shown that Hyperbaric oxygen may lead to reduced senility effects, especially elongated telomere, and get rid of aging cells in aged individuals [8]. Similarly, HOT can modulate the aging of the skin by angiogenesis and senescent cell clearance [9].

Metformin (Glucophage®) which is an antidiabetic agent in type II DM was prescribed off-label for weight reduction [10], in polycystic ovary syndrome (POS), in addition, for delaying the process of aging [11]. The latter can be due to decrease chronic inflammatory processes that enhance the chance of age-related changes, expressly neurodegenerative pathways. Metformin was also found to elevate the life span and delay aging [12]. A small randomized controlled trial suggests that (16) weeks of vitamin D<sub>3</sub> supplementation decreases genetic aging [13].

Omega(3) supplements can fight off inflammation and slow aging. It alters the fraction of consumption of fatty acids among adults in such a way that aids in preserving minute DNA fragments in the leukocytes. Normally, with the aging process, the telomeres shorten more and more. Lengthening of the telomeres was detected in those who enhanced the omega-3 proportion to other fatty acids in their food. As well, supplementation of Omega-3 decreases oxidative stress resulting from undue circulatory free radicals, by about 15% compared with the placebo group in one study [14]. The omega-3 fatty acid supplement also lowers cardiac inflammation, which has detrimental health complications. Such food supplements could signify a rare unique dietary intervention that lowers the risk of aging-associated changes, including cardiac disease, DM, arthritis, and Alzheimer's disease [15,16].

## 2. METHODOLOGY

Multiple different studies were reviewed from 1990-2022. These studies take care of the theories and classifications of the aging process, as well as, human life expectancy. Also, part of the studies reviewed the role of HOT, metformin, and vitamin D<sub>3</sub> supplements in reversing or delaying the aging process. The results show that HOT, Metformin, vitamin D<sub>3</sub>, and Omega-3 fatty acids may delay the aging changes.

## 3. DISCUSSION

Aging is a natural physiological change that happens to elderly people. These changes are harmful and can lead later to different diseases of different organs such as heart disease, and dementia [17].

Genetically, the DNA of the people is 98.5% indistinguishable. The peoples even have similar body hormones. Be that as it may, the proportions of those hormones make sense of a portion of the distinctions among people. According to our experience and previous studies; males begin to age after (45) and females after (35). However, there are significant physiological, organic, and wholesome contrasts among both sexes including (18, 19, 20, and 21):

- Men likewise have denser, more grounded bones, ligaments, and tendons than ladies.
- Normally, males are bulkier than females. Furthermore, their skeletal musculatures are quicker and more impressive. In any case, ladies' muscles all the more promptly oppose weariness and are quicker to recuperate.
- The contrast among people's size, bulk, and calorie needs implies men regularly require to eat fewer carbohydrates and higher protein.
- Folate is a fundamental nutrient and is required by all people. Thus far, folic acid is particularly essential for females of child-bearing ages. On the off chance that they get pregnant, ladies necessitate sufficient folic acid to sufficient fetal brain growth.
- There are contrasts in the manner female and male minds are organized, and how both handle data or collaborate with synthetic signs. A few models: males have more data comprising dim matter, yet females have more brain white matter that interfaces various pieces of the cerebrum. Additionally, females possess greater memory communities than males.
- The basic fuel in females is fat during the activity. For men, it's sugars.
- The everyday calorie prerequisite for men is higher than for ladies. There are a couple of explanations behind this: higher bulk, height, and BMR. Muscles consume over two times the calories fat does.
- Men got thicker skin by around 25% and greater density of the collagen.
- Women regularly convey their muscle versus fat in the thighs and hips. In general fat will be stored around males' stomachs.
- The circadian rhythm is probably shorter in females ( $\leq 24$ hrs). Males are probably night owls. However, females function better through the intervals of sleep deprivation.
- For the vast majority of life, people have similar vitamin D prerequisites. Be that as it may, more seasoned females need to increase their intake of vitamin D, for better calcium retention.

Many studies used HOT; others used Metformin; while others used vitamin D<sub>3</sub> supplement. After reviewing many worldwide studies, we recommend combining HOT plus metformin, vitamin D<sub>3</sub>, and omega-3 dietary supplements to slow down the aging process in the following program which is used for two months/ yearly for life:

1. Six sessions of HOT, one session every ten days (for two months/ yearly for life).
2. Metformin (250-750mg) daily according to the weight for two months/ yearly for life.
3. Vitamin D<sub>3</sub> supplement from 2500-7500 IU) daily for two months/ yearly for life.

4. Omega-3 supplement (250-750 units) daily for two months/ yearly for life.
5. The ages which should enter this program are older than 35 for females and over 45 for males.

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