The Biblical Chronologist

WHAT HAS BEEN IS REMOTE AND EXCEEDINGLY MYSTERIOUS. WHO CAN DISCOVER IT?
(Ecclesiastes 7:24)

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The RDI for Vitamin MePiA Has Now Been Reduced

The RDI (Recommended Daily Intake) for the anti-aging vitamin MePiA (methylphosphinic acid) has now been reduced by a factor of ten. This change does not affect the number of drops per day of Dr. Aardsma's Anti-Aging Vitamins one should take. The concentration of vitamin MePiA in new bottles of the supplement has been reduced by a factor of ten, so the number of drops per day an individual needs to take stays the same. The present report explains the rationale behind this new RDI.

A Brief Review

MePiA and MePA are a closely related pair of relatively recently discovered vitamins. These two previously unknown vitamins appear to have been present in natural supplies of drinking water prior to Noah's Flood, but their source was broken by the Flood so that they have been unavailable for the past several thousand years. This has resulted in a pair of vitamin deficiency diseases in the global population for these thousands of years. The development of morbidity and consequent eventual mortality due to these vitamin deficiency diseases in humans is today called aging.

Death due to MePA and MePiA deficiency diseases dominates human mortality today. In a study of U.S. actuarial data for the year 2016, deficiency diseases of vitamins MePA and MePiA were found to be responsible for over 93% of total deaths from all causes.[1] The absence from the diet of MePiA by itself was found to be responsible for 40% of total deaths from all causes.

Adequate dietary intake of MePA prevents and cures MePA deficiency disease and adequate dietary intake of MePiA prevents and cures MePiA deficiency disease. This means that restoration of these two vitamins to the human diet in sufficient amounts has potential both to prevent and to cure modern human aging, lengthening the human life span from roughly 75 years at present to roughly 925 years, as it was prior to Noah's Flood.

Acute toxicity of these anti-aging vitamins has never been expected to be a problem and has not been found to be a problem when investigated experimentally. Both MePA and MePiA are water-soluble vitamins which are easily excreted from the body in urine, alleviating concerns about acute toxicity from excessive intakes. When these vitamins were administered to lab mice in highly excessive amounts for most of their life spans, only a modest chronic toxicity was observed.[2]

To the present time, the RDIs of these two vitamins have focused on guaranteeing dietary sufficiency. Insufficiency is by far the major concern. It is known to be the cause of the fatal condition called aging, of which the global population currently suffers.

Initial Fine Tuning of Dietary Sufficiency

From the start, the proper RDI for MePiA was predicted to lie probably "within a factor of ten of a few micrograms per day."[3] In an effort to guarantee sufficiency in the absence of a direct urinary excretion measurement method, the RDI for both vitamins was initially set on the high end of this range.

[1] Gerald E. Aardsma, *Aging: Cause and Cure*, 3rd ed. (Loda, IL: Aardsma Research and Publishing, 2023), 198. www.BiblicalChronologist.org.

[2] Gerald E. Aardsma, *Aging: Cause and Cure*, 3rd ed. (Loda, IL: Aardsma Research and Publishing, 2023), 138–142. www.BiblicalChronologist.org.

[3] Gerald E. Aardsma, *Aging: Cause and Cure* (Loda, IL: Aardsma Research and Publishing, 2017), 111–112. www.BiblicalChronologist.org.

The first successful measurement of vitamin MePA excretion confirmed that its RDI was higher than necessary, as expected.[4] This meant that the RDI of MePA could be fine tuned downward.

Because MePiA is relatively easily oxidized to stable MePA, its concentration in natural sources of pre-Flood drinking water, such as lakes and rivers, is expected to have been much lower than the concentration of MePA. Thus, the natural dietary intake of vitamin MePiA is expected to have been much lower than that of MePA. This suggested that the RDI for MePiA was probably also too high. When the concentration of MePiA excreted in human urine was subsequently measured, most of the daily intake of MePiA was found to be present in the urine, confirming this expectation as well.

Thus, these two measurements motivated a reduction of the RDIs for both vitamins by a factor of two.[5]

Further Fine Tuning

Sufficient experience has now been gained to begin to move beyond the single criterion of dietary sufficiency in fine tuning the RDIs of these two anti-aging vitamins. The ultimate goal is to optimize the RDIs of these two vitamins for human health and longevity while minimizing waste.

Vitamin MePiA is the obvious candidate for current fine tuning. To the present time, Dr. Aardsma's Anti-Aging Vitamins dietary supplement has contained these two vitamins in equal concentrations, yielding equal dietary intakes for both MePA and MePiA. Fine tuning seems to call for the concentration of MePiA to be significantly reduced relative to that of MePA to imitate natural intakes of these two vitamins more closely.

An Upper Limit for MePiA

Some water-soluble vitamins have an upper limit (UL) specified for their daily intake. The body is found to be tolerant of significant excess for most water-soluble vitamins, so no UL is specified for these vitamins. A few water-soluble vitamins are exceptions to this general behavior. Niacin, for example, has a UL for adults of 35 mg/day (lower for children and teens). Higher intakes can lead to rashes, headaches, and dizziness. Vitamin B_6 is another example. Its UL is 100 mg/day for adults. Folate is another example. It has a UL of 1 mg/day for adults.

The smallest of these example ULs is one hundred times greater than the RDI of MePiA which pertains at present. Thus, the possibility that MePiA might have a UL has seemed unlikely. In addition, there have been no reports from users of Dr. Aardsma's Anti-Aging Vitamins dietary supplement of rashes, headaches, dizziness or the like urging investigation in this direction.

But MePiA breaks new ground relative to the traditional vitamins. MePiA is a phosphinate. In nature, phosphinates have almost no representation among the classes of biomolecules. In contrast, the phosphonate class, to which MePA belongs, is ubiquitously represented, as is true of the classes of the other water-soluble vitamins. Thus, MePiA cannot simply be regarded as just another ordinary water-soluble vitamin, and its behavior cannot be assumed similar in all respects to the other water-soluble vitamins.

When MePiA is looked at solely on the basis of its own intrinsic properties, theoretical reasons present themselves suggesting that it might very well have a UL. MePiA appears at present to function exclusively as an antioxidant, and its antioxidant activity appears to be utilized exclusively within mitochondria where it is essential to their maintenance, its job being to neutralize reactive oxygen species (ROS) produced as unwanted side-products of normal respiration.

But the role played by ROS in the body in general is not exclusively bad. ROS are used outside the mitochondria as cellular signaling molecules, for example. This implies that physiologically excessive MePiA external to the mitochondria has potential to interfere with ROS signaling systems outside the mitochondria.

To test for a UL for vitamin MePiA, my wife Helen and I tried an experiment in which MePA alone was supplemented for several weeks. The known, extremely long biological half-life of MePiA within

[4]Gerald E. Aardsma, "First Measurement of Vitamin MePA Excreted in Human Urine Confirms Adequacy of RDI," *The Biblical Chronologist* 12.1 (April 26, 2022): 1–4. www.BiblicalChronologist.org.

[5]Gerald E. Aardsma, "The RDIs for Vitamins MePA and MePiA Have Now Been Reduced," *The Biblical Chronologist* 12.2 (June 21, 2022): 1–2. www.BiblicalChronologist.org.

mitochondria eliminated concern about development of an MePiA deficiency in this experiment. Being tested was whether excess MePiA external to the mitochondria might be interfering in normal ROS signaling systems external to the mitochondria.

No change was observed until the sixth night, when Helen, who is prone to insomnia, reported profoundly improved sleep.

Prior to beginning to take the anti-aging vitamins, Helen had suffered significant loss of sleep each night with consequent reduced ability to cope with life's normal demands each day. The advent of MePA solved this for her.[6] However, after a year or two, insomnia began to creep back in again, but this time with no obvious debilitation during the day.

The hypothesis now began to present itself that excess MePiA may have been the cause of the recurrence of Helen's insomnia and also of the initiation of insomnia with me.[7] Vitamin MePiA had been discovered several years after MePA, so it was not initially present in Dr. Aardsma's Anti-Aging dietary supplement.

The next evening, both Helen and I slept much better than usual, corroborating this hypothesis. In addition, nighttime dreaming significantly intensified for both of us. In subsequent weeks, the pattern of improved sleep with more dreams persisted, though insomnia was not entirely eliminated. In addition, we both felt more relaxed during waking hours.

These results support the hypothesis that MePiA does have a UL which its previous RDI exceeded.

The previous RDI for MePiA furnished adult males with 10 micrograms (0.01 milligrams) of MePiA per day. This amount is known, from the measurement of MePiA excreted in urine mentioned above, to yield a significant excess of MePiA, arguing for a large reduction in daily intake. The known, extremely long half-life of MePiA *in the mitochondria* relative to the biological half-lives of all other vitamins implies that the amount of MePiA needed on a daily basis to replenish mitochondrial needs must be exceedingly small—almost certainly submicrogram. This also argues for a large reduction in daily intake.

To satisfy the need for dietary sufficiency while not exceeding the evident UL for MePiA, its concentration has now be reduced by a factor of ten in Dr. Aardsma's Anti-Aging dietary supplement.

Conclusion

The UL for MePiA appears to be almost certainly less than 10 micrograms per day, and it seems likely to be less than 2 micrograms per day on an adult male basis.

To minimize potential for unwanted interference in normal ROS signaling systems, the RDI for MePiA has now been reduced by a factor of ten, from 10 micrograms per day to 1 microgram per day for adult males (i.e., 8 drops, with proportionately smaller intakes for females and children according to their recommended daily number of drops of Dr. Aardsma's Anti-Aging Vitamins dietary supplement). ⋄

[6]Gerald E. Aardsma, *Aging: Cause and Cure*, 3rd ed. (Loda, IL: Aardsma Research and Publishing, 2023), 153. www.BiblicalChronologist.org.

[7]Gerald E. Aardsma, *Aging: Cause and Cure*, 3rd ed. (Loda, IL: Aardsma Research and Publishing, 2023), 150–151. www.BiblicalChronologist.org.

The Biblical Chronologist is written and edited by Gerald E. Aardsma, a Ph.D. scientist (nuclear physics) with special background in radioisotopic dating methods such as radiocarbon. *The Biblical Chronologist* has a fourfold purpose:

1. to encourage, enrich, and strengthen the faith of conservative Christians through instruction in biblical chronology and its many implications,
2. to foster informed, up-to-date, scholarly research in this vital field,
3. to communicate current developments and discoveries stemming from biblical chronology in an easily understood manner, and
4. to advance the growth of knowledge via a proper integration of ancient biblical and modern scientific data and principles.

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