

Chapter 11 Snake Oils and the Infomercial Risk

This chapter is an alert about treatments that are already on the market that are claimed to counteract the detrimental effects of aging. Some of the claims actually go as far as to assert not only a reduction of aging rates for those taking the treatments, but also a reversal of existing aging effects, but, except for a few cosmetic treatments that impact on our surface looks only, we are not there, *yet*. Recent letters and papers from prominent groups of gerontologists warn of those making such premature claims. You can bet that you will not first learn about a breakthrough from an infomercial. A number of the “cures” involve the hormones of youth: GH, DHEA, melatonin, etc—hormones that are made in higher abundance early in life. There have been a number of short-term experimental tests of the effects of some of these hormones, and the limitations of these studies will be examined. The cautionary tale of HRT, the most studied of these hormones, will be used to demonstrate the risks of oversimplified thinking. I will close the chapter with a brief review of what we think we know today about how to stay as healthy as possible for as long as possible, with the understanding that this is a moving target as our knowledge advances.

Scientists’ distress

Gerontologists are quite distressed about a number of practicing physicians and even a few other scientists who are claiming already to have cures to the problems of aging. What is extra distressing is that these claims come just as gerontology is developing into a mature science that may soon have partial answers. In what has been called a war on the pseudo-claims of current “anti-aging” medicine, prominent aging researchers have issued public warnings about over-hyped claims quite reminiscent of the snake-oils of the past. In 2002, cautionary notes endorsed by fifty prominent gerontologists appeared in two journals (Olshansky et al, 2002a; 2002b). They caution that anti-aging entrepreneurs are making false claims about anti-aging “therapies,” promoting unproven, and perhaps harmful, products, and luring individual consumers to expensive “longevity” clinics. The issue is not one of whether a cure might be close, but of whether it has arrived. The researchers note that:

“A number of scientists look at current research trends and feel hopeful. They can envision a time when treatments based on an understanding of aging can help slow its progression...Systematic investigations into aging and its modification are in progress and could one day provide methods to slow our inevitable decline and extend health and longevity. That day, however, has not dawned, yet.” [Olshansky et al, 2002a, p. 95].

In the same year, yet another group of eleven researchers, headed by Robert Butler, the former Director of the National Institute of Aging, point out that:

“[T]here is no convincing evidence that currently existing so-called ‘antiaging’ remedies promoted by a variety of companies and other organizations can slow aging or increase longevity in humans. Nevertheless, a variety of experiments with laboratory animals indicate that aging rates and life expectancy can be altered.”³ [Butler et al, 2002, p. B333]

They go on to say:

“On the basis of caloric restriction and other dietary and genetic intervention results with animal models, one can now make a principled argument that further research along well-defined lines could produce a rational testable strategy for interventions that might slow aging...” [Butler et al, 2002, p. B336]

These comments reflect the theme of my book--we are getting close, but we have not yet arrived. The discussion of anti-aging medicine was enlarged in 2004 in a two part series in the Journal of Gerontology (Olshansky et al, 2004). Below, I examine some of the current products and treatments and try to dispel the hype.

The Hormones of Youth

There are a number of human hormones whose production declines in older age, and most of these have been claimed to have anti-aging properties by someone. I will consider several of these.

1. Melatonin

The great French philosopher, Rene Descartes, thought that the pineal gland might be the place where the soul interacted with the brain. Instead, the pineal gland, among other things, produces and secretes the hormone, melatonin (not to be confused with melanin, a skin darkening substance). Melatonin arrived with a bang some years ago, with newsweeklies carrying cover stories of the new way to reduce aging and cure jet lag at the same time. Melatonin is known to be involved in circadian rhythms (24 hour cycles), and perhaps even seasonal rhythms, in animals. The pineal gland is controlled by light, directly or indirectly depending on the animal, and it secretes melatonin at higher levels when it is dark. That means more melatonin is secreted in winter, when nights are longer, at least for those animals that depend on the sunlight. Melatonin is thought to contribute to sleep, and has been recommended as a possible aid for those experiencing jet lag. However, in addition to being a possible help in jet lag, melatonin has been hyped as a product that reduces or reverses aging. There is no evidence to support such a claim, but the publicity that was generated just a few years ago shows how easy it is for the media to be misled, or perhaps intentionally to hype such aging-related promises. What should be an embarrassment for publications and outlets that provide news to millions of us every day, seems to be forgotten or forgiven by the public, so such inaccuracies can be expected to continue. Sometimes fiction seems to sell better than the truth.

2. Estrogen/progestin

Hormone Replacement Therapy (HRT) has been the most widely used, and best studied, form of hormone replacement. Many studies suggested benefits for women taking hormone supplements beginning at the time of menopause. The estrogen alone, or combination estrogen/progestin treatments, help to control hot flashes, reduce bone loss, and were thought to benefit heart and circulation, among other things. Many women were taking HRT for at least several years to ease the menopause transition. Since long-term benefits were believed to outweigh risks, some women continued to take HRT for ten to twenty years. An increased risk of breast cancer was recognized, but, since the risk

of heart problems in pre-menopausal women was less than that for men, and since women had an increased risk of such problems after menopause, it was assumed that HRT would help to protect women from heart problems. Beginning in the late-1990s, as studies of the effects of HRT enrolled more subjects, the results began to suggest problems, and in 2002 the Women's Health Initiative study trial on HRT was halted mid-trial because it became clear that HRT was adding to the risk of death, not reducing it. The advantages to the circulatory system were not confirmed. Instead, heart problems and stroke deaths were higher and the risks of certain forms of cancer were increased in those on HRT. Very recently, a further analysis of the data suggests that HRT might be beneficial in terms of heart problems, at least for some period of time, for those who begin the therapy at the time of menopause, but does appear to elevate the risks for those who begin therapy ten years after menopause (Manson et al, 2007).

When we examine the complex history of HRT studies and recommendations, and the many years it has taken to begin to understand the benefits and risks involved, it is hard to justify support for any of the other hormone treatments now being proposed—there just has been too little study of the effects. The millions of women who were taking HRT, and encouraged to do so by their physicians because of partial knowledge that suggested more benefits than problems, were acting as guinea pigs. None of the other hormones have had such through study, and there is no reason to believe that they won't produce serious, unwanted side effects, including, in many cases, the risk of increased deaths from cancers that are stimulated by the very hormones themselves. It is not unusual for a hormone to stimulate some cells in the body to divide. Any cell-type that is stimulated to divide by a hormone being given as a treatment for aging will put the user at risk for cancer of that cell type. That it took so long to find out that there are serious problems for some on long-term HRT certainly should be a cautionary tale for any who believe that they have the solutions to aging today. That is especially the case with the next, shockingly popular "treatment."

3. Growth Hormone

Recently I have been bombarded by internet offers of human growth hormone (hGH), with wild claims being given about how it will return youthful states in older individuals. One amusing aspect of some of the ads is that they claim to offer growth hormone, or GH-like material, to be taken by mouth. GH is a protein. As such, it will be broken down into its component amino acids in the stomach—it will not reach the body's cells in active form if simply ingested. The largely fraudulent claims are reflected in the ineffective form of treatment.

There have been some short-term studies of GH given by injection, and it is the results of these that have led some elderly people to take hGH despite the lack of evidence that GH helps in the long run. The controlled studies of the effects of hGH on elderly subjects have only lasted for six months (Rudman, 1990). Some of the findings include increased muscle mass and strength. Those taking the drug felt better. However, when the injections stopped, there was a reversal of these effects. Thus, to continue to benefit, it would appear that one would need to take GH indefinitely. There are no long-term studies to indicate that such a program would be beneficial (Harman and Blackman, 2004).

One reason to be cautious is that this is not a hormone whose level decreases only in old age. We greatly reduce hGH production at the end of puberty. There probably are good reasons why, and those who, due to genetic errors, continue to produce hGH can demonstrate some bad side effects—continued growth of the bones of head and face, causing distortions; carpal tunnel syndrome from continued bone growth, etc. There may also be increased risks of some cancers. We also have noted in the last chapter that mice with lower levels of growth hormone actually live longer—the opposite of what would be expected by those who are alleging anti-aging effects of hGH. Nevertheless, there are physicians who are giving regular injections to patients today. I don't know if we next will see lawsuits from these guinea pigs, but there are major issues with the use of a drug prohibited by the FDA for use as an anti-aging medicine (Reisman, 2004). Anyone seriously considering using hGH should first read the recent article about anti-aging quackery by the centenarian researcher mentioned earlier, Perls (2004).

4. Testosterone and DHEA

Testosterone production in males declines with age. DHEA is a steroid related to testosterone which has been marketed as a rejuvenating hormone. There have been several placebo-controlled studies done recently to test the effectiveness of DHEA in reducing signs of aging. None has found any significant benefit to the use of DHEA in men or women. It continues to be offered to those who have money to waste and who lack the brains or knowledge to know better. For details, see the review by Allolio and Arlt (2002).

What to Do Today to Stay Healthier Longer

Most are quite familiar with the lifestyle choices that can contribute to healthier living—exercise, eat right, manage stress, and don't smoke. Most of these environmental factors appear to have their effects because they reduce the risks of one or more age-related diseases, rather than because they reduce the rate at which we age. The message of this chapter is that there is nothing that has yet been shown in humans to actually reduce the rate of aging. While the entire book is about doing just that, we are not there yet.

Nevertheless, most of us would benefit by choosing a healthy lifestyle, and the earlier in life, the better. Those of us who choose healthy lifestyles are more likely to enjoy longer periods of good health. If you smoke, quit. If you are overweight, exercise more and control the kinds and amounts of things you eat. If you are a male, get married (marriage makes a small, but significant, difference for men, but not for women!). Avoid living in heavily polluted areas of the country. Maintain an active social and mental life. If you need to go out in the sun for any extended period, use a good sunscreen that protects against both UVA and UVB radiation. Eat your fruits and vegetables along with whole grains while controlling the amount of fat in your diet. Have parents who live a long time. Concerning alcohol, those who drink a little, say one drink a day, appear to live longer than those who are tea-toddlers or who drink too much. A bit of alcohol may help to protect against plaque formation in arteries. However, alcohol is not good for brain cells, so one does not want to overdo it. When I tell my students that a drink a day is better than none, I also tell them that they can't save it up and take seven on a Saturday night! In fact, considering one's brain, a drink every second or third day might be best.

Finally, don't be a sucker for an infomercial or an email suggesting a solution to aging has been found because you might just shorten your life if you do. A fool and his money are soon parted, and there are desperate fools today who seek to avoid aging or cure age-related disorders, such as cancer. Some are willing to try almost anything out of fear of growing old and dying, but there is no fountain of youth today, and you probably have better things to spend your money on and better things to do with your time. When a solution comes, it will not likely be revealed first in an infomercial. I'd suggest that there will be front-page articles in papers and newsweeklies and on the national news, but that alone is not enough, as false hopes already have been made such splashes, so be careful. Read what is being written and listen to what is being said by those who are most likely to know. Use your reasoning powers, and not your desires, to drive your decisions. Look to a variety of experts to help guide you, and avoid depending on those who have something to sell. Be cautious about believing what you see on the internet or in the news without checking original sources. When a partial, first-draft solution is here, the decision as to whether to try it will be a major one that each of us will have to make. There will be risks and no assurances, and there also will be disruptions of individual lives and in society more generally. That is the subject of the next chapter.