

"ALTERED STATES"

The Impact of the Hormone Beta-Endorphin
On the Individual and on Society

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Wynn L. Radford, III

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Let me tell you about my trip to Australia

Over the past two years, I have participated in four triathlons, an athletic event where you swim, bike and run in one continuous race. To prepare myself for each race, my training consisted of running 15, biking 30 and swimming 2½ miles per week. However, once my curiosity and the challenge of the event subsided, my body continued to tell me that it needed to be exercised, and rather strenuously. I kept asking myself, "Why am I doing this?" What could compel me to leave a warm bed at 6:00 a.m. to go run through downtown Hopkinsville? Obviously, whatever it was, this was pretty powerful stuff. As a result, one major question intrigued me: Why did I feel better, both physically and psychologically after strenuous exercise? Through strenuous exercise, I was able to experience an "altered state", a peak experience which made me feel better than if I did not exercise.

Further research and thought indicates that the driving force was due to the hormone beta-endorphin. The "altered state" which I experienced through strenuous exercise can be seen as just one instance in which the body manufactures its own chemicals in response to a stressful situation. The significance of this neurochemical, as to why it motivated me to run and on its future significance in all of our lives, is the subject of this paper.

Recent research concerning beta-endorphin has opened up an area full of interesting possibilities and challenges. The way in which man addresses the synthesization of chemicals such as beta-endorphin could dramatically alter medical science and society as we know them. Its discovery, in fact, has been described in some scientific quarters as "the greatest medical breakthrough since penicillin." Some have gone so far as to say, in effect, "what we are dealing with is the basis for religion and government."

Specifically identified in the early 1970's, the leading researcher has been Dr. Choh Hao Li, PhD, director of the Hormone Research Laboratory of the U. of Calif. in San Francisco. Research has shown that like such drugs as morphine and valium, endorphins are able to mask pain as well as alter a person's mood. The strength of the different hormones continue to astound scientists, with at least one endorphin believed to be over 10,000 times more powerful than morphine. However, the obvious advantage of endorphins are that they are produced naturally by the brain, are easily replenished, and do not cloud the mind as other pain or stress relieving drugs. So excited is Dr. Li about the future research of beta-endorphin that he says:

"It might be related to happiness, to pleasure. I cannot speculate or philosophize too much or people will think I am crazy. But I have the feeling that this molecule might be very important in making the difference between whether a person is happy or not."

Simply put, hormones like beta-endorphin are natural opiates which are produced automatically by the brain. They are produced as an adaptive mechanism in response to pain or stress. In moments of stress, the adrenaline gland increases the body's blood pressure, heart rate and similar physical functions which help to mobilize the body for action. This adrenalin response is the same type of automatic response produced when prehistoric man faced a sabre-tooth tiger or when modern man walks onto the tennis court. Although the adrenalin surge is crucial in determining success in "fight or flight" situations, too much stress and the high blood pressure which accompanies it is harmful to the body and can lead to a heart attack or stroke. Where the stressful situation is prolonged, endorphins are produced which counteract the initial adrenalin triggered response. Endorphins slow respiration, lower blood pressure and calm motor activity throughout the body. Apparently, the body "burns" endorphins in response

to pain or stress, dulling a person's sensitivity. Endorphins allow the body to exceed its "normal" limits without irreparable damage once the adrenalin has been released. This explains why a person is able to perform acts, both mental and physical, which in normal, less stressful situations would be considered difficult if not impossible. Examples include actions in times of war, on the athletic field, or ~~at~~ the scene of a major accident.

The interesting point is that some individuals repeatedly place themselves in situations which trigger the adrenalin response, almost in an addictive fashion. Where sufficient "fight or flight" situations do not regularly occur, such situations are sought out, whether in business, athletics, or similar stressful situations. For some, the challenge itself may be all that is desired, with the accompanying adrenalin rush being the primary motivator. For others, however, it is the euphoric feeling that is subsequently produced as a result of endorphins. Such a feeling leads to a reduction in stress and an "altered state" one more peaceful than otherwise possible. As I mentioned earlier, to make me get out of bed and run at 6:00 a.m., we are dealing with powerful stuff.

Although only recently "discovered", by scientists, endorphins appear to have played a significant role in the rituals which man had practiced for 1,000's of years. It would appear that it was not by accident that the local witch doctor obtained his best results by subjecting individuals to a stressful situation. Conditions such as physical exhaustion, darkness, silence, fasting, high altitude, extreme temperatures and isolation all have the common characteristic of placing the participant in a highly stressful situation. Regardless of the stressful situation, the ability to withstand self-induced pain or stress was given some form of heroic significance. Playing the devil's advocate, is interesting to ask how many of history's leaders that proved themselves in such trial by fire situations were truly men of heroic stature.

Or, perhaps they were simply able to produce adrendalin and endorphins at a more efficient rate than their fellow competitors.. Whether through fasting or isolation, having stumbled onto a situation which produced adrenalin and endorphins, the "magic steps" leading to such experiences became closely guarded secrets. It might be argued that much of mankind's basis for authority, both religious and political, was initally placed in those persons that were mistakenly perceived as having divine guidance or superior intellectual capabilities. Perhaps the ability to influence tribes or communities were more closely related to how well the leader could alter the level of his follower's endorphins. Ingeniously, although unknowingly, ancient leaders were able to magnify their abilities by appearing to have unique talents. In reality, perhaps it was not the leader that was unique, but simply his ability to produce an euphoric experience in his followers by utilizing their own natural chemicals. As history progressed, it would seem that the rituals producing such altered states became more structured, whether through religious or political practices. The eventual progression led to a dependence on outside forces, through which an individual could consistently expect to experience an altered state. What had initially been a natural response by the body in a stressful situation was taken by the local leaders and turned into an event which had special significance. Not surprisingly, the emphasis on the resulting altered state shifted from benefitting the individual to benefitting the ruling leader or group.

In contrast, certain eastern practices, such as meditation and yogi, have always emphasized that peace of mind comes from within and is not dependent on outside forces. Modern research indicates that certain Eastern practices allow an individual to voluntarily control bodily responses that Western thought has traditionally considered involuntary. Although not fully understood,

such practices appear to allow the brain to release endorphins on cue, without an adrendalin triggered response. Examples include the ability to withstand pain and to alter one's breathing level. Although often thought of as esoteric, western scientists are beginning to examine more closely the basis for such Eastern practices.

If indeed grounded in the voluntary release of endorphins, it is hoped that their release can be learned and improved through practice. Such voluntary control of endorphins would allow one to by-pass the adrendalin triggered response, which up to recently, has always been thought of as a prerequisite.

Recent medical evidence further indicates that the body has the ability to make itself better, with endorphins playing a major role. Modern science is just now beginning to appreciate the mind-body connection in illnesses often taken advantage of by ancient ritual leaders. The brain has been shown to release endorphins which counteract such chemicals, so that the mind believes all is well. Using placebos, studies have shown that through the power of suggestion, at least 1/3 of the population is capable of making themselves feel better by the involuntary release of endorphins.

Continued research of endorphins is generating immediate benefits as well as great expectations. Ranging from painkillers to aphrodisiacs, hormones are being synthesized which would serve as the ultimate diet pill, tranquilizer, and by improving concentration and memory, the first true intelligence amplifier. Endorphins are being described as the reason that electroshock works in mental patients, as the level of beta-endorphins is increased. Acupuncture appears to have its basis in endorphins, as the needles placed in the body produce an endorphin like increase in the body's cerebrospinal fluid.

Fasting has repeating been shown to generate endorphins, as the body manufactures opiates as a physiological adaptation to the body's decreasing

blood pressure. "Gambler's High", the feeling of euphoric experience by a person while gambling, appears to have an endorphin base. Interestingly enough, horse-racing and poker machine addicts have lower levels of beta-endorphins than the normal population. Persons suffering from migraine headaches have been shown to have greater beta-endorphin levels at the end of a headache than before. This would indicate that endorphins are released by the brain to help the migraine victims recover by masking the pain.

Another area in which endorphins are expected to play a major role is in the treatment of drug addicts, as the brain's natural opiates are much stronger than either cocaine or morphine. Amazingly, when given synthesized beta-endorphins drug addicts have shown no desire for nor withdrawal symptoms from the drugs that previously dominated their life. Chronic pain sufferers have been aided by using small black boxes which can be used to regulate the level of endorphins being released as pain-killers.

Now that science realizes that human emotions can be chemically altered by the brain's natural opiates, what are the consequences involved in their manipulation, both to the individual and to society? For the individual, thank goodness, there would be no need to subject oneself to physical exercise to obtain the release of endorphins. Although now capable of synthesizing beta-endorphins on a limited basis, it is soon expected that such hormones will be synthesized on an inexpensive, commercial scale. Rather than run, one would simply take a pill for a relaxed feeling of euphoria. Drug and alcohol dependence would become a thing of the past, as easy access to the synthesized drug would produce a euphoric feeling much greater than any non-natural drug. Chronic pain from illness or injury could also be controlled on a natural basis and without side effects.

Those persons classified as over-achievers might no longer need the constant euphoric feeling that success in business can produce. Ambition might cease to be of value, as any individual could easily duplicate the feeling now

experienced when a sought after goal is achieved. Basically, each individual would have to ask himself, "Why work and place oneself in a stressful situation when it is not necessary?" Once Maslow's basic human needs have been satisfied, food and shelter, self-esteem could be achieved without any problem. ✓

Why try to make the next \$1,000,000.00, run 10 seconds faster, or as Plato encouraged to "Know Thyself" if happiness would be only a pill away.

From society's standpoint, it is suggested that the altering of moods might become the "control" of the future over the population just as "Bread and Circuses" were in ancient Rome. So long as the populace had sufficient quantities of the proper mood alteror, civil unrest would cease to be a factor. In theory, everyone would be so happy that a different ruling party or lifestyle would cease to be important issues. So long as governmental leaders could supply mood altering drugs, all would be well. As in Aldous Huxley's Brave New World, it is suggested that a highly centralized totalitarian government would emerge. Such a government would be able to convince the population to love their servitude. Together with infant conditioning and blind allegiance to accepting any position which the government assigned, a society could be shaped which would be much different than the society with which we are presently familiar. Just as endorphins evolved to allow man to assert his uniqueness they may someday be used against him, but in an attempt to stamp out his uniqueness.

All of this is a long way from trying to determine "What makes Wynn run". The whole issue of "altered states" through endorphins is a major one which will become more significant as research continues. Beta-endorphins appear to have the potential to allow man to make himself feel better and to heal himself sooner on a natural basis. The outside forces which have traditionally provided the structure for a person's well-being, government and religion, should undergo significant changes as a result of future research.

As man continues to genetically tinker with such hormones, it will be interesting to see how the fruits of such research are applied. Perhaps more important, it will be interesting to see how our future leaders handle such information, whether for the benefit of man or for their own use.