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ENERGY, ENTROPY AND ESTROGENS IN AGING

Abstract: A physiological, biochemical and ecological concept of aging providing a basis for therapy and prevention using anti-estrogen, anti-prolactin, and anti-calcium substances, and a proposal for further research to investigate the mechanisms by which photo-period modifies the biological processes and materials which control the rate of aging.

In my study of aging-changes in oxidative metabolism, around 1970 I began to notice parallels between aging and the effects of estrogens. Investigating further, it appeared that an energy deficit was the common factor, and that many harmful factors, including radiation and hypoxia, caused a similar pattern of changes. (Reference 1.)

A variety of biophysical methods (NMR and ESR of living tissue, whole-cell electrophoresis, the influence of electromagnetic fields on nerve cell latent periods, etc.) led me to interpret the biochemical changes occurring in various tissues in aging, hypoxia, and estrogen dominance as a coherent responce of the cells to disorder resulting from an excess expenditure of energy. (References 1, 2 and 3.)

In 1971 I suggested that progesterone and related steroids would have anti-aging properties deriving from their effects on the structure of cell water and the energy charge of cell. (References 3 and 4.)

The same pattern of estrogen dominance is seen in both sexes with aging, and in all species studied. The anti-estrogens, especially progesterone and dehydroepiandrosterone (DHEA) decline similarly with age in both sexes.

Since 1971, I have worked out the physiological implications of this approach, as I will describe briefly below, and I have tested the ideas in a wide variety of age-retaled conditions in humans, including (1) Alzheimer's disease and Parkinson's disease and other «senile» changes in nerve function, (2) a variety of senile degenerative skin changes (3) changes in the circulatory system including arrhythmia, hypertension, gangrene of the feet and putative «stroke,» (4) changes in bones including osteoporosis and arthritis, and (5) changes in respiratory function, including emphysema-like changes appearing in old age.

Progesterone and other «anti-estrogens» have caused rapid and thorough recovery from many of the diseases which are widely considered to be the unavoidable consequences of aging. «Auto-immune» diseases have also been treated succesfully, regardless of age. (References 5 and 6.)

Many of the metabolic consequences of stress tend to create vicious circles of self-stimulating processes of decline, on both the cellular and the systemic levels. The work of F.Z. Meyerson, especially his concept of the «calcium triad,» contributes powerful support to this view.

On the cellular level, in aging and estrogen -dominance, Magnesium-ATP tends to be lost as calcium is retained in excess. The sodium-potassium-ATPase activity declines. Proteolysis increasingly dominates relative to protein synthesis. Repolarization of nerve, muscle, and secretory cell tends to be retarded, causing such diverse events as «elevated hypothalamis thresholds,» coronary vasopasm, insomnia, hallucinations, delayed T-wave in the electrocardiogram, and leg cramps. Ammonia tends to appear in tissues in these states, as protein catabolism dominates.

On the systemic level in aging, estrogenic effects are evident: a tendency toward prolactinoma, toxic effects of prolactin on kidneys and other organs affecting water balance, disturbance of thyroid function, adrenal compensation or exhaustion, atrophy of muscle, skin, and other tissues. Prostate hypertrophy now appears to involve estrogen dominance, and to be reversible with progesterone treatment. Reduced sensitivity to CO_2 in the blood, and diminished gas diffusion in the lung also occur very frequently. Bowel function is altered by prolaction toxicity, and by other degenerative changes.

Since certain environmental events relate clearly to the patterned metabolic changes mentioned above, those events must be considered.

Animals of very different types migrate to higher latitudes for reproduction. At high latitudes the effect of the vernal increase of photoperiod becomes intensified. The light-induced hormonal changes which increase fertility also increase general vitality and decrease the problems associated with aging. The hormonal changes occuring in winter and at night aggravate degenerative processes and increase mortality in all of the species that have been studied, including humans, in spite of the use of artificial lights. Certain age-related conditions, especially osteoporosis and depression, can be alleviated

with artificial illumination. It has been established that darkness is associated with diminished anti-estrogens, and with elevation of prolaction and cortisone. The normal diurnal cycle appears to be a factor in aging.

Loss of muscular tone in the bowel is associated with aging, and increases the likelihood of exposure to bacterial endotoxin and to bacterial anti-thyroid substances, and increases the antigen burden. Permeability of the bowel wall is increased by stress, and forms part of another vicious circle, promoting degenerative changes. These degenerative changes can be reversed partly by treatment with hormones, but the altered bowel flora is a problem which requires further research.

Treatment with progesterone and other anti-estrogens has reversed a variety of age-related changes in humans and in experimental animals, and has extended the life-span of experimental animals.

A useful theory of aging should include three levels: cellular chemistry, physiology, and the relation of the organism to its environments. All of these levels can be involved in self-stimulating processes, stabilizing the organism at different levels of energy and entropy in such a way as to make degenerative changes appear to be irreversible. Nevertheless, intervention at certain points to reverse disorder is possible.

PROJECTED RESEARCH: I am investigating the biochemistry, and potential therapeutic use, of substances which seem to directly or indirectly promote cellular order, repolarization, and sensitivity to biological signals. To further rationalize chemical therapy for aging and its complications, I will try to determine the mechanisms by which extended photoperiods promote the desirable hormones. This will involve (1) examination of the effects of light on DHEA levels (2), the effects of photoperiod on intestinal flora, and (3) investigation of physical-chemical changes in light sensitive tissues during stimulation.

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COMPARISON OF THE BIOAVAILABILITY OF NUTRITIONAL NEUROTRANSMITTER PRE-CURSORS TO THE BRAIN, ALONE AND IN COMBINATION WITH DIFFERENT PENETRATION ENHANCEMENT FACTORS OF THE BLOOD-BRAIN-BARRIER (PILOT SELF STUDY)

Baruch Bezalel, M.D. Research Physician

INTRODUCTION

A full function of the human brain depends among others upon it's uninhibited ability of it's predetermined cells to produce the neurotransmitters acetylcholine and dopamine. This ability of the brain cells is diminished in degenerative brain processes (1,2,3,5), which on the other hand can be restored by the crucial biochemical compounds acetylcholyne, dopamine and gangliosides (1,2,3,5, 6), whereby the latter are also called biotransmitter of membrane mediated information (9).

To approach this full brain function in a 56 years old male individual (myself), nutritional neurotransmitter precursors alone and in combination with either blood brain barrier penetrating factors such as dimethylamino - ethanol (DMAE), (11) of thymus glandiosides (8,9) were experimentally ingested and possible effects reported.

Materials and Methods

The nutritional neurotransmitter precursors were ingested at 5 pm every day by the author.

Materials used were: 1-tyrosine (General Nutrition Corp.), choline (Solgay Co., Inc.),

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- Sironval : green plant ageing and the Gerontology Laws of Le Compte
- Hershey and Lee : Longevity as an entropy-driven process
- Lee and Hershey : The utilization of BMR measurements as a routine diagnostic procedure in normal health maintenance.
- Bezazel : Biochemical considerations about a biological combination for cell restoration.
- Denes : Subclinical attitude changes in old age.
- etc.

Today we received a message from the USSR that Dr. L.V. KOMAROV died suddenly. We share the feelings of sorrow with his family and the USSR.

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