

TOWARDS REGENERATION I

Regenerating the Person

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Introduction

In clinical practice, the physician is often confronted by the effects of ageing. It is not uncommon to observe multiple pathologies within an individual, even though that individual may be diagnosed as suffering from a single condition.

A patient with hypertension may be prescribed beta-blockers and be reassured of control of the symptoms. A closer examination could, however, reveal the beginnings of degenerative change in the circulatory system, connective tissues, musculo-skeletal system and the pulmonary system. There may also be signs of impaired function of the kidneys, liver and nervous system.

According to the current paradigm of western scientific medicine, the patient is sufficiently well served by the prescription of a chemical drug with some possible lifestyle or dietary advice. The notion of trophorestoration – the active promotion of repair in damaged organ systems and body tissues – simply does not enter the picture. The apparent objective of scientific medicine is the control of symptoms through medication, which if successful, is considered to “cure” the problem.

This attitude is not universal among physicians.

Within the herbal medicine tradition, particularly as expressed in recent decades, notions of tonification and trophorestoration are well established¹. Within the hygienist school and among practitioners of nature cure, the central understanding is that through physical purification programs such as fasting and elimination diets, the body's capacity to regenerate itself and restore health to damaged tissues can be powerfully stimulated². In more recently developed therapies such as that described by Max Gerson for the treatment of cancer and other chronic degenerative conditions, much attention is given to “enteric restoration” programs integral to the treatment program. In addition, use is made of foods and medicines which promote trophorestoration³.

In the discussion that follows, the notion of regeneration, or reversing the effects of ageing, will provide a focus for investigating certain aspects of the ageing process. Attention will be drawn to Rasayana therapy, one of the divisions of Ayurvedic medicine, which is directly concerned with regeneration of the human organism. And some suggestions will be offered regarding the potential contribution of the western herbal tradition to furthering the development of a medicine of regeneration.

THE AGEING PROCESS

The human body is subject to cycles of growth, maintenance and breakdown. In investigating the idea of regeneration, it is useful to have a clear understanding

of the usual consequences of the ageing process and of the inevitability of degenerative change.

Most physicians accept that ageing is often accompanied by a loss of biological function. In the western world, the speciality of geriatric medicine concerns itself with the well being of patients damaged by degenerative change and the effects of ageing.

The notion of regeneration is not considered to be a serious option in geriatric management. Other systems of medicine, including Ayurveda, have given much attention to regeneration as a valid therapeutic possibility.

The Western Perspective

It is generally accepted by practitioners of geriatric medicine that the composition of our physical bodies begins to change at about the age of 40 years and that degenerative change progresses steadily thereafter. The following changes have been observed and well documented by biomedicine as characteristic tendencies of ageing in humans⁴.

- i). Lean body mass declines steadily from the age of 40 years onwards. This reflects a reduction in the amount of muscle tissue and an often-associated increase in fatty tissue. Basal oxygen consumption usually decreases in consequence.
- ii). Blood volume and haemoglobin levels decrease, as also does lymphocyte count.
- iii). Coronary fibrous tissue increases, while the elasticity of the aorta and of the main vascular branches decreases. Cardiac output also falls with age, paralleling the reduction in basal oxygen consumption.
- iv). Further connective tissue change occurs within the pulmonary system resulting in diminished elasticity of lung tissue. Pulmonary vital capacity and ventilatory capacity decrease, while residual volume increases.
- v). Within the urinary system, glomerular filtration rate falls at the rate of approximately 1% per annum after the age of 40 years. A similar degree of functional loss occurs in tubular reabsorption and secretion capacities. Furthermore, there is progressive decline in the ability of the kidneys to secrete hydrogen ions. This results in decreased buffering of blood pH levels in response to changes in acid/alkaline balance; it takes longer for the body to eliminate and normalise an acid load.
- vi). The endocrine system also undergoes changes with ageing. Apart from cessation of oestrogen production at menopause, thyroid hormone levels decrease, while both insulin secretion and activity decrease in later life. One can also expect involutional change in the adrenal and pituitary glands.

vii). Many significant age-related changes have been identified in the nervous system. The number of neurones in the cerebral cortex, motor pathways and basal ganglia all tend to decrease in later life. Many of the remaining neurones will often show structural change such as dendritic involution. This will often result in diminished sensory capacity, loss of observational acuity, and an increased tendency to tremor, muscle rigidity and spasm.

viii). Involutional changes in the lens of the eye begin relatively early in life. Changes in lens elasticity begin in the mid-twenties and progress, usually asymptotically, for a decade or two. Symptoms such as presbyopia, or loss of near vision, commonly manifest in the mid-forties. By this time, there will usually be a significant loss of elasticity in the lens capsule and suspensory ligaments as well as within the lens itself.

The intention of the foregoing is to present a framework which may prove useful in exploring therapeutic strategies for physiological regeneration.

The Ayurvedic Perspective

Ayurvedic medicine is one of the indigenous systems of medicine practised in India. It is a classic system with an extensive literature elaborated over many centuries^{5,6}. There are eight well-defined divisions within Ayurveda: internal medicine, surgery, diseases of the head and neck, toxicology, psychiatry and demonology, paediatrics, geriatrics and regeneration, and sexuality. These eight divisions continue to provide the essential core of training in Ayurvedic institutes in India.

Of particular relevance to this discussion is the seventh division, the theory and practice of Rasayana. Rasayana, or rejuvenation therapy, aims primarily to restore health and to maintain youthfulness into old age. Its more general aim is the nurturing of a society in which individuals maintain vigour and energy throughout life⁷.

In considering ageing and its effects, Ayurveda identifies four distinct periods within the human life-span:

- i). Birth – 20 years: This is a period of rapid cellular proliferation and of development and perfection of bodily structures and functional capacities.
- ii). 20 – 40 years: During this period, one's physical powers are at their height. The body maintains a strong capacity to repair itself after injury and despite abuse. Throughout this time, one's mental and creative development – the testing of ideas and of personal power – gains in momentum. One's responsibilities also begin to increase as a result of marriage, child-rearing and bread-winning.

There is an acknowledged danger that during this time, the great potential for mental growth and projection may exceed one's capacity to deal with associated

stresses. This may result in early “burn-out”, or the development of stress-related disorders.

iii). 40 – 60 years: The age of 40 years is considered to be a major turning point in life. It heralds either a time of stagnation and progressive decay or a time of consolidation, empowerment and creativity. With adequate nourishment, with effective elimination of metabolic wastes and poisons, and with freedom from excessive stress, health will be maintained and there will be continuous expansion in the range and power of one’s mental activities.

This third period is also an important time for the development and preservation of a principle known as *wojas*. According to Ayurveda, *wojas* is directly related to sexual energy. Its preservation during this time increases one’s mental acuity, physical energy and recuperative power. Its dissipation hastens the ageing process.

iv). 60 years onwards: This is the period of physiological and structural decline. The ageing process develops momentum. Metabolism slows down, toxic wastes accumulate despite rigorous attention to diet, calcification occurs in various body tissues, synovial fluid dries up, the efficiency of the heart, kidneys and liver begins to decline, nervous system function begins to diminish and one progressively develops such symptoms as hypertension, insomnia, prostatic enlargement in males, joint pain, vertigo, tinnitus, poor vision and hearing, loosening of the teeth and so on.

The aim of Rasayana therapy is to pre-empt such changes as far as possible, and to mitigate the severity of symptoms if degenerative changes have already occurred. It is generally acknowledged that Rasayana therapy loses effectiveness the later it is commenced.

TOWARDS A MEDICINE OF REGENERATION

In describing a medicine of regeneration, different approaches are possible. Firstly, through investigating the documented findings of age-related change, creative solutions may suggest themselves and a composite therapy can be devised. Alternatively, and probably more easily, one can examine and test existing systems of regenerative medicine, such as Rasayana, and gain insight into principles that can then be applied in the western context.

The following brief review suggests possibilities for the development of a new specialty area in the long-term agenda of medical herbalism.

A Synthetic Approach

i). Muscular atrophy: The role of exercise programs in the maintenance of muscle mass and tone is not to be underestimated. For those less athletically inclined, the prescription of a brisk daily walk will be beneficial. Amino acid formulations may prove useful as an adjuvant to physical exercise programs.

The role of plants containing steroidal and triterpenoid nuclei such as *Glycyrrhiza glabra*, *Panax ginseng*, *Eleutherococcus senticosus* and *Centella asiatica* as anabolic agents is worth further investigation, particularly in view of their history as regenerative medicines in the traditional systems of China and India^{7,8}.

ii). Connective tissue changes: Apart from the direct use of vitamin C and bioflavonoids, flavanoid rich plants such as *Rosa canina*, *Crataegus oxycantha*, *Fagopyrum esculentum*, *Sambucus nigra* and *Trifolium pratense* may prove to be useful.

iii). Pulmonary function: Western medical science has yet to acknowledge the fact that human breathing capacity can be improved through active training. Simple breathing exercises, regularly performed, will not only improve ventilatory capacity, but will also stimulate blood oxygenation and aerobic metabolism generally. The importance of such practices is fully acknowledged in the Siddha system of medicine where *pranayama*, or breath control, is often an integral part of treatment programs⁹.

iv). Kidney function: With the knowledge that both glomerular filtration rate and renal function fall steadily from the age of 40 years onwards, the potential role of such urinary system tonics plants as *Solidago spp.*, *Agathosma betulina* and *Agropyron repens* in ageing patients expands considerably.

The dietary implications of the reduced capacity of ageing kidneys to eliminate acid wastes are also worth examining. In orthodox naturopathic practise, for example, an alkaline diet is routinely recommended in the management and treatment of musculo-skeletal degenerative conditions.

v). Endocrine system changes: The fact that both insulin activity and secretion decrease with age confirm the value of selecting complex carbohydrates in preference to simple sugars in regenerative programs and in later life.

A more direct approach may be taken in regard to thyroid function. The role of simple neck exercises to improve thyroid blood flow should be considered. This has long been recognised in hatha yoga practise, where such exercises as the plough posture and the cobra posture are used to tonify the thyroid gland among other things¹⁰.

The role of steroidal adaptogens such as *Panax ginseng* and *Eleutherococcus senticosus* in the maintenance of endocrine integrity has yet to be fully clarified.

vi). Neurological involution: Simpler solutions in the minimising of degenerative change within the central nervous system could focus on maximising cerebral blood flow. This can be directly approached through postural inversion. Athletic feats such as head and shoulder stands are not required. The regular use of a slant-board, as recommended by American hygienist Bernard Jensen, is sufficient.

Cerebrovascular stimulants such as *Ginkgo biloba* have considerable potential as neurological regenerators. And the role of mild diaphoretics as autonomic nervous system activators has yet to be investigated. *Melissa officinalis* has a most remarkable history in the European tradition as a plant of longevity^{11,12,13}.

vii). Visual involution: It is surprising, particularly in view of the long-established fact that the lens of the eye and its suspensory ligaments begin to lose elasticity in the third decade of life, that simple eye exercises are not routinely included in school physical exercise programs. Visual function can be significantly empowered by appropriately designed exercises.

The Rasayana Approach

As described earlier, Rasayana is primarily concerned with disease prevention and with reversal of the effects of ageing. Apart from elements within the hygienist tradition and the European alchemical tradition¹⁴, there is at present no equivalent to Rasayana in western medicine.

Traditionally, there are certain preconditions to be met before commencing a Rasayana program. Firstly, the prospective candidate must possess ethical and moral integrity. Self-discipline and emotional balance are essential. Candidates may be instructed over a period of time in codes of conduct and methods of physical and dietetic control. They are encouraged to think and to work in ways which will be conducive to the healthy development of society as a whole.

Secondly, the prospective candidate is required to undergo a massive, thoroughgoing elimination of toxins through such specialised therapies as emesis, purgation and colonic cleansing. Severe dietary restriction is usually prescribed concurrently.

Two basic approaches are utilised in Rasayana therapy. Traditionally, the preferred method, termed *Kutipraveshika* requires confinement of the individual in a specially constructed cottage for a period of three to six months. During this time, various practices are undertaken by the patient, and restorative treatments are administered by the physician.

The second method of Rasayana treatment, termed *Vata Atapika*, does not require such a radical interruption in the life pattern of the individual. This process may be undertaken while one continues to remain active within both household and profession.

In both methods, the individual is required to undergo a systematic enteric cleansing and varying degrees of dietary restriction.

Of particular interest to medical herbalists is the fact that the administration of a number of plants and their extracts is essential to the treatment program. The more important of these plants include *Terminalia chebula*, *Terminalia belerica* and *Emblica officinalis* (the chebolic, beleric and emblic myrobalans), *Centella asiatica* and *Embelia ribes*⁷. Other plants which are also used in Rasayana

programs include *Allium sativa*, *Glycyrrhiza glabra*, *Zingiber officinale*, *Boerhaavia diffusa*, *Tinospora cordifolia* and *Withania somnifera*¹⁵.

Certain practitioners, especially those of the *Siddha* tradition, also make use of mineral preparations in restorative programs.

The Rasayana approach provides a valuable model from which a regenerative therapeutic program can be developed.

By combining the insights provided by western medical science on the ageing process with methods drawn from both eastern and western traditions of regenerative medicine, various composite therapies become possible.

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