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4 **Āyurveda** by **Subhash Kak**

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6 | Āyurveda, the Vedic system of medicine, views health as harmony between body, mind,
7 | and spirit. Its two most famous texts belong to the schools of Charaka and Sushruta.

8 | According to Charaka, health and disease are not predetermined,
9 | prolonged by human effort. Sushruta defines the purpose of medicine as curing the

10 | diseases of the sick, protecting the healthy, and prolonging life. The beginnings of
11 | medicine may be traced to the Rigveda, since it speaks of the *bhishaj*, or physician, in
12 | connection with setting a broken bone. From other references the *bhishaj* or *vaidya*

13 | emerges as a healer of disease and an expert in herbs. The twin gods Āshvins are
14 | particularly associated with the healing of blindness, lameness, and leprosy. Soma is
15 | another healing deity.

16

17 | According to the Charaka tradition, there existed six schools of medicine, founded by the
18 | disciples of the sage Punarvasu Ātreya. Each of these disciples, -Agnivesha, Bhela,

19 | Jatūkarna, Parāshara, Hārīta, and Kshārapāni, -composed a *Samhitā*. Of these, the one

20 | composed by Agnivesha was supposed to be the best. The *Agnivesha Samhitā* was later

21 | revised by Charaka, and it came to be known as *Charaka Samhitā*. Āyurveda is

22 | traditionally divided into eight branches which, in Charaka's scheme, are: *sūtra-sthāna*,

23 | general principles; *nidāna-sthāna*, pathology; *vimāna-sthāna*, diagnostics; *sharīra-*

1 *sthāna*, physiology and anatomy; *indriya- sthāna*, prognosis; *chikitsā- sthāna*,
 2 therapeutics; *kalpa- sthāna*, pharmaceutics; and *siddhi- sthāna*, successful treatment.

3

4 In the Charaka school, the first teacher was Bhāradvāja. In the Sushruta school, the first

5 person to expound Āyurvedic knowledge was Dhanvantari, who then taught it to

6 Divodāsa. The *Charaka* and *Sushruta Samhitās* are compendiums of two traditions,

7 rather than texts authored by single authors. A third tradition is that of the Kāshyapas.

8 The beginnings of these traditions must go back to the second millennium B.C. if not

9 earlier, because of the parallel information obtained in the Vedic *Samhitās* and the

10 description in the *Mahābhārata*. There is much that is common in the texts, except that

11 the *Sushruta Samhitā* is richer in the field of surgery. Part of the original *Charaka*

12 *Samhitā* is lost, and the current version has several chapters by the Kashmiri scholar

13 Dridhabala.

14

15 An attempt to reconcile the texts of Charaka and Sushruta was made by Vāgbhata the

16 Elder in the second century B.C. in his *Ashtānga Sangraha*. The works of Charaka,

17 Sushruta, and the Elder Vagbhata are considered canonical and are reverentially called

18 the Vriddha Trayi, “the triad of ancients.” Later, Vāgbhata the Younger wrote the

19 *Ashtānga Hridaya Samhitā*, which is a lucid presentation of the Āyurveda giving due

20 place to the surgical techniques of Sushruta. In the eighth century, Mādhav wrote his

21 *Nidāna*.

22

1 **The Principal Ideas**

2 The idea that breath (*prāna*) is central to health occurs very early in the Vedic literature.

3 In Āyurveda, which is one of the secondary sciences associated with the Atharvaveda,
 4 health is seen as balance of the three *doshas*, or primary forces of *prāna* or *vāta* (air),
 5 *agni* or *pitta* (fire), and *soma* or *kapha* (water). *Vāta* was taken to represent the principle
 6 of motion, development in general, and the functions of the nervous system in particular.
 7 *Pitta* signifies the function of metabolism, including digestion and the formation of
 8 blood, and various secretions and excretions that are either the means or the end product
 9 of body processes. *Kapha* represents functions of cooling, preservation, and heat
 10 regulation. The imbalance of these elements leads to illness. The predominance of one or
 11 the other *dosha* leads not only to different physiological but also to different
 12 psychological types. Just as the body mirrors the entire universe in a recursive fashion,
 13 the three *doshas* are defined recursively within the body.

14

15 Each of the *doshas* is recognized to be of five kinds. *Vāta* appears as *prāna* (governing
 16 respiration), *udāna* (for uttering sounds and speaking), *samāna* (for separating the
 17 digested juice), *vyāna* (carrying fluids including blood to all parts of the body), and
 18 *apāna* (expelling waste products). *Pitta* appears as *pāchaka* (digest and impart heat),
 19 *ranjaka* (impart redness to the chyle and blood), *sādhaka* (increase the power of the
 20 brain), *ālochaka* (strengthen vision), and *bhrājaka* (improve complexion). *Kapha* appears
 21 as *kledaka* (moisten food), *avalambaka* (impart energy and strength), *bodhaka* (enable
 22 tasting), *tarpaka* (govern the eye and other sensory organs), and *shleshmaka* (act as
 23 lubricant).

1

2 Every substance (animal, vegetable or mineral) is a *dravya* with the following properties
 3 in different proportions: *rasa*, *guna*, *vīrya*, *vipāka*, and *prabhāva*. The *gunas* are qualities
 4 such as heat, cold, heaviness, lightness, and so on, in a total of twenty types. Of the
 5 twenty *gunas*, heat (*ushna*) and cold (*shīta*) are the most prominent. *Vīrya* is generative
 6 energy that may also be hot or cold.

7

8 *Vipāka* may be understood as the biochemical transformations of food, whereas *prabhāva*
 9 is the subtle effect of the substance on the body. Food is converted into *rasa* by the
 10 digestive action of *jātharāgni*, or the fire in the stomach. *Rasas* are six in number:
 11 *madhura*, *āmla*, *lavana*, *tikta*, *katu*, and *kashāya*. Each *rasa* which is recognized by taste
 12 is a result of the predominance of two elements. Knowledge of the *rasas* is important in
 13 therapeutics.

14

15 The five elements in various proportions are said to form seven kinds of tissue (*dhātu*).
 16 These are: *rasa* (plasma), *rakta* (blood), *māmsa* (flesh), *medas* (fat), *asthi* (bone), *majjā*
 17 (marrow), and *shukra* (semen). The activity of the *dhātu* is represented by *ojas* (vitality)
 18 or *bala* (strength). *Ojas* is mediated through an oily, white fluid that permeates the whole
 19 body. The functions of the vital organs like the heart, brain, spleen, and liver are
 20 explained on the basis of the flow and exchange of tissues. The heart is considered the
 21 chief receptacle of the three chief fluids of the body: *rasa*, *rakta*, and *ojas*. The body has
 22 107 vital points or *marmas*, which are points of vulnerability where important vessels,
 23 nerves, muscles, and organs are situated.

1

2 **Physiological References in the Vedic Texts**

3 The Garbha Upanishad describes the body as consisting of five elements (with further
 4 groups of five as in the Sāṅkhya system of philosophy) supported on six (the sweet, sour,
 5 salt, bitter, acid and harsh juices of food), endowed with six qualities, made up of seven
 6 tissues, three *doshas*, and twice-begotten (through father and mother). It further adds that
 7 the head has four skull-bones, with sixteen sockets on each side. It says that the body has
 8 107 joints, 180 sutures, 900 sinews, 700 veins, 500 muscles, 360 bones, and 45 million
 9 hairs.

10

11 In Chhandogya Upanishad, organisms are divided into three classes based on their origin:
 12 born alive (from a womb), born from an egg, and born from a germ.

13

14 **Training a Vaidya**

15 The Āyurvedic physician was trained in eight branches of medicine: *kāyāchikitsā*
 16 (internal medicine), *shalyachikitsā* (surgery including anatomy), *shālākyaachikitsā* (eye,
 17 ear, nose, and throat diseases), *kaumārabhritya* (pediatrics), *bhūtavidyā* (psychiatry, or
 18 demonology), *agada tantra* (toxicology), *rasāyana* (science of rejuvenation), and
 19 *vājīkarana* (the science of fertility).

20

21 Apart from learning these, the student of Āyurveda was expected to know ten arts that
 22 were indispensable in the preparation and application of medicines: distillation, operative
 23 skills, cooking, horticulture, metallurgy, sugar manufacture, pharmacy, analysis and

1 separation of minerals, compounding of metals, and preparation of alkalis. The teaching
2 of various subjects was done during the instruction of relevant clinical subjects. For
3 example, teaching of anatomy was a part of the teaching of surgery, embryology was a
4 part of training in pediatrics and obstetrics, and the knowledge of physiology and
5 pathology was interwoven in the teaching of all the clinical disciplines.

6

7 | The initiation ceremony of the Charaka physician was called *upanayana*, and it involved
8 the teacher leading the student three times around the sacred fire. This ceremony made
9 the student thrice-born (*trija*), distinguished from the twice-born (*dvija*) non-physicians.

10 |

11 At the closing of the initiation, the guru gave a solemn address to the students in which
12 the guru directed the students to a life of chastity, honesty, and vegetarianism. The
13 student was to strive with all his being for the health of the sick. He was not to betray
14 patients for his own advantage. He was to dress modestly and avoid strong drink. He was
15 to be collected and self-controlled, measured in speech at all times. He was to constantly
16 improve his knowledge and technical skill. In the home of the patient he was to be
17 courteous and modest, directing all attention to the patient's welfare. He was not to
18 divulge any knowledge about the patient and his family. If the patient was incurable, he
19 was to keep this to himself if it was likely to harm the patient or others.

20

21 The normal length of the student's training appears to have been seven years. Before
22 graduation, the student was to pass a test. But the physician was to continue to learn
23 through texts, direct observation (*pratyaksha*), and through inference (*anumāna*). In

1 addition, the *vaidyas* attended meetings where knowledge was exchanged. The doctors
 2 were also enjoined to gain knowledge of unusual remedies from herdsmen, and forest-
 3 dwellers. The *vaidya* was assisted by nurses (*parichāraka*). Sushruta describes the ideal
 4 nurse as devoted, friendly, watchful, not inclined to disgust, and knowledgeable.

5

6 There is reference to free hospitals in ancient India. They were called Bhaishajya Griha,
 7 Ārogya Shālā, or Chikitsā Shālā. The best account of the workings of such a free hospital
 8 has come down to us from the Indianized Khmer kingdom of Cambodia.

9

10

11 **Dissection and Surgery**

12 Sushruta laid great emphasis on direct observation and learning through dissection
 13 (*avagharshana*). Sushruta classified surgical operations into eight categories: incision
 14 (*chhedana*), excision (*bhedana*), scarification (*lekhana*), puncturing (*vedhana*), probing
 15 (*eshana*), extraction (*āharana*), evacuation and drainage (*vishrāvana*), and suturing
 16 (*sīvana*). Sushruta lists 101 blunt and 20 sharp instruments that were used in surgery
 17 instructing that these should be made of steel and kept in a portable case with a separate
 18 compartment for each instrument and describes fourteen types of bandages. Surgical
 19 operations on all parts of the body were described, including laparotomy, craniotomy,
 20 caesarian section, plastic repair of the torn ear lobe cheiloplasty, rhinoplasty, excision of
 21 cataract, tonsillectomy, excision of laryngeal polyps, excision of anal fistule, repair of
 22 hernias and prolapse of rectum, lithotomy, amputation of bones, and many neurosurgical
 23 procedures.

1

2 Medications were used for pre-operative preparation, and medicated oils were used for
 3 the dressing of wounds. Ice, caustics, and cautery were used for haemostasis. Medicated
 4 wines were used before and after surgery to assuage pain. A drug called *sammohini* was
 5 used to make the patient unconscious before a major operation; another drug, *sanjivani*,
 6 was employed to resuscitate the patient after operation or shock.

7

8 **Diagnosis**

9 It was enjoined that diagnosis be made using all five senses together with interrogation.

10 The diagnosis was based on: cause (*nidāna*); premonitory indications (*pūrvarūpa*);
 11 symptoms (*rūpa*); therapeutic tests (*upashaya*); and the natural course of development of
 12 the disease (*samprāpti*). Sushruta declares that the physician (*bhishaj*), the drug (*dravya*),
 13 the nurse (*parichāraka*), and the patient (*rogī*) are the four pillars on which rest the
 14 success of the treatment.

15

16 Different methods of treatment, based on the diagnosis of the patient, were outlined. The
 17 drugs were classified into 75 types according to their therapeutic effect. For successful
 18 treatment, the following ten factors were to be kept in mind: the organism (*sharīra*); its
 19 maintenance (*vritti*); the cause of disease (*hetu*); the nature of disease (*vyādhi*); action or
 20 treatment (*karma*); effects or results (*kārya*); time (*kāla*); the agent or the physician
 21 (*kartā*); the means and instruments (*karana*); and the decision on the line of treatment
 22 (*vidhi vinishchaya*).

23

1 Sushruta considers the head as the center of the senses and describes cranial nerves
 2 associated with specific sensory function. Based on the derangement of the *doshas*, he
 3 classifies a total of 1120 diseases. Charaka, on the other hand, considers the diseases to
 4 be innumerable. The *dosha*-type diseases are called *nija*, whereas those with an external
 5 basis are called *āgantuka*. The microbial origin of disease and the infective nature of
 6 diseases such as fevers, leprosy, and tuberculosis was known. According to Sushruta, all
 7 forms of leprosy, some other skin conditions, tuberculosis, ophthalmic and epidemic
 8 diseases are borne by air and water and may be transmitted from one person to another.
 9 These diseases are not only due to the derangement of *vāta*, *pitta*, and *kapha*, but are also
 10 of parasitic origin. He adds: “There are fine organisms that circulate in the blood and are
 11 invisible to the naked eye which give rise to many diseases.”

12

13 One of the most impressive innovations arising out of later Āyurveda is that of
 14 inoculation against smallpox. It is believed that this treatment arose before 1000 A.D.
 15 From there it spread to China, western Asia, and Africa, and finally, in the early
 16 eighteenth century, to Europe and North America. The Indian treatment was described by
 17 John Z. Holwell in 1767 to the College of Physicians in London in a report titled “An
 18 account of the manner of inoculating for the smallpox in the East Indies.” It not only
 19 described the system in great detail, it also provided the rationale behind it.

20

21 It appears that the idea of inoculation derived from *agada-tantra*, one of the eight
 22 branches of traditional Ayurveda that deals with poisons and toxins in small dosages, and
 23 application of specific concoctions to punctures in the skin for treatment of certain skin

1 diseases (Sushruta *Samhitā in Chikitsāsthāna* 9.10). The Charaka *Samhita* speaks of how
 2 deadly poisons can be converted into excellent medicine and how two toxins can be
 3 antagonistic to each other.

4

5 An Āyurvedic classification, based on etiological factors, divided disease into seven
 6 categories: hereditary conditions based on the diseased germ cells (*ādibala*); congenital
 7 disease (*janmabala*); diseases due to the disturbance of the humors (*doshabala*); injuries
 8 and traumas (*sanghātabala*); seasonal diseases (*kālabala*); random diseases (*daivabala*);
 9 and natural conditions such as aging (*svabhāvabala*).

10

11 | Menstrual disturbances, diseases of the female genital tract, and their treatments were
 12 | classified. The clinical course and the various stages of labor, the management of
 13 | puerperium, miscarriage and abortion, and difficult labor were discussed in detail. The
 14 | different malpositions of the fetus were well understood. Many diseases of children were
 15 | described.

16

17 The diseases of the head and the nervous system were given in detail. Among the nervous
 18 disorders described are convulsions, apoplectic fits, hysteric fits, tetanus, dorsal bending,
 19 hemiplegia, total paralysis, facial paralysis, lockjaw, stiff neck, paralysis of the tongue,
 20 | sciatica, St. Vitus' s dance, paralysis agitans, and fainting. Four kinds of epilepsy were
 21 | described; it included an instruction that, once the attack was over, the patient should not
 22 | be rebuked but should be cheered with friendly talk. Sushruta devoted one complete

1 chapter to interpretation of dreams, believing that the dreams of the patient, together with
 2 other omens, can be an indication to the outcome of the treatment.

3

4 Āyurveda was also applied to animal welfare. Texts on veterinary science describe the
 5 application of the science to different animals. Refuges and homes for sick and aged
 6 animals and birds were endowed.

7

8 Indian medical texts had currency in lands far beyond India. A fourth-century medical
 9 manuscript from Chinese Turkestan, known as the Bower Manuscript, is based on Indian
 10 texts. Burzuya, the court physician to the Persian emperor Khusrau Anushirvan (sixth
 11 century), visited India, bringing back Indian texts and physicians. The Weber Manuscript
 12 is a translation into Kucheian of a collection of Sanskrit medical recipes. The ninth
 13 century Arabic medical compendium by Tabari mentions the texts of Charaka, Sushruta,
 14 Vāgbhata, and Mādhava. In the eighth century, *Amritahridaya*, a large text in four parts,
 15 was translated into Tibetan. It embodies the teachings of Buddha Bhaishajyaguru. From
 16 Tibetan this text was translated into Mongolian and later into Russian, achieving great
 17 popularity. Other Āyurvedic texts were also translated into Tibetan; these included the
 18 *Ashva-āyurveda* (The Horse Āyurveda) of Shālihotra. In the late twentieth century,
 19 Āyurveda became increasingly popular in India and the West.

20

21 See also Ashvamedha; Charaka Samhita; Sushruta Samhita; Upanishadic Philosophy;

22 Yoga

23

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