

**When You're Hot Your're Hot.
From Ancient India to Modern California.
Symposium on Food, Health, and Healing.
An Exploration Across Cultures and Through Time.
The California Academy of Sciences, San Francisco,
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My presentation this morning will examine an ancient medical-nutritional-dietary healing system called allopathy. In simplest terms the allopathic approach to medicine-nutrition-diet holds that health represents balance, illness imbalance. Imbalance or disease is usually described in two dimensions: illnesses that are hot-cold, wet-dry, or a combination. The allopathic approach holds that disease treatment is based upon diet, whereby all foods are classified as hot, neutral, or cold; wet, neutral, or dry, and the law of contraria contrariis, or doctrine of opposites is followed. This means that hot diseases are treated using cold foods, wet diseases with dry in order to restore health.

Allopathic concepts originated in ancient India more than 3500 years ago. Allopathy subsequently spread from India westward into the Mediterranean basin during the 5th century B.C., and likewise spread from India eastward into China during Han Dynasty times, that is between the 2nd century B.C. and 1st century A.D. Allopathy then spread globally in the 16th century A.D. during the Spanish and Portuguese era of exploration.

The original Sanskrit document that outlines the structure and form of allopathy is the Caraka-Samhita, one of the most important medical-nutritional documents to survive from antiquity. The Caraka-Samhita challenges nutrition educators and scientists in 1998 to explore the development and evolution of 20th century dietary concepts, and to investigate pre-scientific principals used globally today.

The scientific approach has permitted an understanding and determination of biochemical and physiological mechanisms that regulate digestion, assimilation, metabolism, and excretion. As a scientist and as a student of history, I also accept that allopathic concepts, achieved through millennia of observation, and introspection, also have contributed to nutrition and dietary knowledge. The preservation and widespread availability of classical allopathic texts permits the study and evaluation of ancient dietetics and the pre-scientific management of disease. This process of scientific evaluation allows ancient prescriptions to be tested and conclusions drawn regarding efficacy.

Let us begin our exploration of how allopathy evolved in ancient India and ultimately reached modern California. The roots of the Indian allopathic nutrition and dietetic system are shrouded in mythology. Central to Indian belief is the tenet that eternal knowledge, the study of life or ayurveda, passed from the Creator (Brahma) to humans,

whereupon it was incorporated into medical treatment. The Ayurvedic nutrition-dietary system, born in antiquity and practiced today by millions, is based upon three concepts: 1) recognition and evaluation of clinical signs and symptoms, 2) acknowledgment that behavior and environment influence health or disease, and 3) belief that proper food and diet restores health.

Health, in the Ayurvedic view, is compromised when one or more of four factors are imbalanced: 1) elements (bhutas), 2) humours (dosas), 3) organ feeders (dhatus), and 4) tastes (rasas).

In Indian allopathy five elements are assigned different functions and qualities or attributes. For example:

Earth (prithive) forms bone, hair, muscle, skin, and blood vessels. The qualities of earth include: hardness, odor, sound, taste, and visibility.

Water (appu) forms blood, phlegm, semen, and controls urine excretion. The qualities of water include: cold, light, softness, tangibility, and weight.

Fire (theyu) arouses appetite, stimulates hunger and deep sleep, heightens fear, and alerts thirst. The qualities of fire include: beauty, color, goodness, heat, lightness, movement, passion, strength, and valor.

Air/wind (vayu) arouses mental activity, brings about happiness, and regulates body movements. Its qualities parallel those of water and fire in regard to lightness, movement, and tangibility; it is also designated by touch.

Ether (akasa) causes passion to rise, love to emanate, and triggers the emotions of anger, animosity, fear, hatred, and shame. The qualities of ether are infinite and encompass human goodness and understanding.

The Indian Ayurvedic system also is humoral, that is, it is based upon the pre-scientific concept that body fluids in specific proportions or balance, determine health. A triad of three humours (dosas) is identified:

Air humour (vayu) controls the central and sympathetic nervous system. It is characterized as active, cold, dry, fine, light, mobile, non-slimy, sharp, subtle, and rough. Its primary home is the stomach and navel. Normal functions of air humour include muscle tissue formation and distribution, respiration control, fluid circulation, and waste excretion. When air humour dominates, body extremities become cool, dry, hard, and the tongue darkens. If excessive, air humour causes anorexia, arthritis, colic, diarrhea, fever, rheumatism, and generalized pain and weakness. Restoration of air humour balance requires increased dietary intake of acidic, salty, and sweet foods.

Fire humour (pitta) drives metabolism, digestion, and serves as the source of body heat. It is characterized as bitter, hot, light, liquid, mobile, oily, pungent, sharp, sour, and yellow. Its principal home lies between the heart and navel. Primary functions of fire humour regulate appetite, arouse thirst, produce and maintain proper body color, and separate food into useable and excreted components. Related functions of fire humour maintain heartbeat, eyesight, and intelligence. When aggravated, or stimulated unduly, fire humour makes the body acidic, fiery, and pungent. Excessive fire humour produces anemia, cachexia, deafness, delirium, diarrhea, dryness, fainting, fever, indigestion, jaundice, nausea, tremor, vertigo, vomiting, and generalized weakness. Reduction of fire humour slows digestion and forms slimy residues inside the body, said to retard transmission of nourishment to specific body organs. Dietary treatment to restore fire humour balance is to prescribe astringent, bitter, and sweet foods.

Water humour (kapha) regulates body heat and produces body fluids. It is characterized as cold, heavy, immobile, oily, slimy, soft, sweet, viscous, and white. The primary home of water humour is an ill defined area above the chest, with a secondary home in the stomach. Normal functions of water humour spread mucous secretions, lubricate joints, provide luster to skin, and develop limb firmness. When water humour is aggravated the body becomes cold, heavy, moist, numb, soft, and sweet. Diseases that result include anorexia, asthma, bronchitis, cough, drowsiness, emaciation, fainting, fever, pneumonia, ulcers, and vomiting. Water humour balance is restored through increased intake of astringent, bitter, and pungent foods.

When humours are balanced health results and the primary way to achieve this is by ingesting so-called wholesome foods. It follows, therefore, that over- or under-consumption of specific foods, or incautious selection of dietary combinations, leads to "imbalance" and illness.

Both wholesome and unwholesome foods are defined by Hindu religious precepts. Hindu food codes are outlined in religious texts called the Dharma-Sutra where more than 220 foods or food-related behaviors are prohibited. These ancient Indian dietary codes reveal six categories of food-related taboos directed towards: 1) human professions, behavioral traits, and social conditions that determine who may have access to and receive food, 2) religious rituals that define food purity, 3) consumer responsibilities and proper behavior when confronted with uncooked, stale, or sour (fermented) foods, 4) inappropriate human eating behaviors, 5) inappropriate animal behaviors or morphological characteristics that compromise food purity, and 6) specific forbidden plants, birds, fish, reptiles, mammals, dairy products, and beverages. Countering this wide range of unwholesome, prohibited foods are more than 110 specific codes that define suitable, appropriate items that are considered religiously wholesome.

The underlying principles of Indian Ayurvedic medicine spread westward into the Mediterranean region after trade was established between India, Persia, and Greece. It is a widely thought that this geographical link between India and the Mediterranean stimulated the development of allopathy expressed within Classical Greek, Roman, and Byzantine medical systems. Most scholars do not believe that Greek and Roman allopathic medicine originated independently.

The earliest surviving Greek texts related to medicine were written by philosophers, not physicians. Thales of Miletus (B.C. 639-544) was the first Mediterranean to propose the doctrine of Four Elements, that air, earth, fire, and water were required for human life. A contemporary of Thales, Anaximander of Miletus (B.C. 611-547 B.C.), wrote that all living matter exhibited temperature and moisture attributes, specifically, qualities of hot or cold and wet or dry. Empedicles of Agrigentum (B.C. 502-443) wrote that air, earth, fire, and water existed as distinct, separate entities within the human body, and concluded that death resulted when innate body heat was extinguished.

Two important Greek physicians, contemporaries of Empedicles, emerged from the mythological cloak of Aesklepios. Both were celebrated during their lifetimes but the fame of only one has transcended geographical-time boundaries of the Mediterranean into the 20th century.

Hippocrates has been called the "Father of Medicine." He was trained by his father, himself a physician, and by another healer named Herodicus. His medical school on the island of Cos still attracts visitors today. Ctesias, the second physician, remains essentially unknown today. It is my thesis, however, that Ctesias should receive more accolades than Hippocrates.

The importance given Hippocrates in the 20th century is due directly to the survival of his medical writings. No Greek medical texts earlier than Hippocrates -- and few after -- have survived the ravages of conquest, war, and the destruction of the ancient Mediterranean libraries. A critical assessment, however, reveals that Hippocrates' ideas, appear to have developed *de novo*, that is without antecedent or reference to earlier physicians. When studied outside of their historical and geographical context, these works appear unique: they demonstrate a well developed allopathic medical-nutritional approaches to treatment. Their medical-nutritional content is unlike any of the surviving texts written by other Mediterranean physicians, whether Carthaganean, Egyptian, or Phoenician.

The question may be posed: were the works of Hippocrates the product of a unique, creative genius, or were they borrowed? And if borrowed, from whom?

Allopathic medicine was not practiced in the Mediterranean before the Greeks but an allopathic treatment system had evolved in India at least 1,000 years earlier than

Hippocrates. The allopathic structure of both Indian and Greek medicine present similar parallels, so much so, that a reasonable argument may be advanced that Greek medical concepts, attributed to Hippocrates, were influenced by an "Indian connection."

Hippocrates never visited India, and it is debated whether or not he visited Persia. The physician Ctesias, however, was a contemporary of Hippocrates. He not only worked in Persia, but visited and practiced medicine in India in the year B.C. 416. Sometime between B.C. 399-384, Ctesias returned to Greece and practiced at the medical school of Cnidos on the Mediterranean coast of Asia Minor.

Hippocrates never visited India: his texts survived and he is credited with "inventing" Mediterranean allopathic medicine. Indeed, he became the "father of medicine." Ctesias visited and practiced medicine in India: his texts were lost through ravages of war and time. His fate was obscurity. Does fame's mirror image -- obscurity -- result from the chance survival of fragile texts? Perhaps Greek medical-nutritional texts authored by Ctesias may be discovered one day and reveal who first introduced allopathic concepts into the Mediterranean region -- the fragments that exist, however, remain a "smoking gun" that confirm an Indian-Greek connection.

Hippocrates accepted the Four Element doctrine and wrote that the body was controlled by four humours: blood, phlegm, yellow bile, and black bile. Health was the state of balance of elements and humours, while disease was imbalance. In addition, health was influenced favorably or adversely by the patient's chronological age and by external factors such as climate-weather, season, and individual lifestyle.

Subsequent Greek and Roman physicians followed the allopathic approach to healing. Galen, physician at Pergamum in modern Turkey, wrote that the four elements of air, earth, fire, and water, as well as moisture-temperature attributes assigned to foods, were the underpinnings of health and disease. Galen perceived that digestion took place in the stomach, where food and beverages were "cooked" by natural heat, then transformed and differentiated into substances that ultimately produced four humours: blood, phlegm, yellow bile, black bile. Galen argued that health and therefore balance was protected if moderation in all things was practiced.

So it was that eventually Greek medical practice passed to the Romans; Greek-Roman medicine likewise passed into Jewish, Christian, and Muslim medical practices as well.

The ancient allopathic practices of India influenced Mediterranean cultures but also spread eastward across the Himalayas to the Middle Kingdom..... to China.

Chinese medicine, nutrition, and dietetics owes its origin, development, and present status to three religious faiths: Confucianism, Taoism, and Buddhism. The great K'ung Fu-tzu proposed the Five Virtues of kindness justice, proper behavior, sound judgment,

and personal integrity. He held that health was guaranteed if one led a moral life. Lao-tzu, the founder of Taoism stated that health was guaranteed if one followed natural law. It was Lao-tzu who proposed the Three Jewels of compassion, humility, and moderation and taught that human contentment and health were gained through unassertive action, and by simplicity in human behavior and actions. Later, Buddhism would enter China and influence its medical-dietary system during the 1st century A.D.

Confucianism and Taoism supported a medical-dietary system based upon five elements and four Yang-Yin principles. The religious, philosophical, medical, and dietary puzzle that captivated many early Chinese practitioners was how to align five elements with four principles, a problem all the more complex because in the cosmic beginning, all things began with the number three.

In Chinese world view, three universal elements were created from chaos or the great void: force, form, and substance. These universal elements initially were united and invisible but upon successive cosmic evolution they separated. After separation, two spheres of heaven and earth became visible and revealed at this time were the complementary principles of Yang-I (identified as: male, light) and Yin-I (female, dark). From these principles were generated the Four Figures called Hsiang: T'ai-Yang (Great Yang), Shao-Yang (Lesser Yang), Shao-Yin (Lesser Yin), and T'ai-Yin (Great Yin). Further creation produced the five essential elements: earth, fire, metal, water, and wood, each with creative-generative and destructive-subjugative attributes.

Yang and Yin principles remained the center post of the Chinese allopathic medicine and dietetics. Through the centuries Yang and Yin have been expressed by Chinese and other Asiatic cultures using paired sets of opposite terms. Four term sets define the primary attributes of Yang and Yin: gender, presence or absence of light, moisture, and temperature.

The four principles of strong and weak Yang and strong and weak Yin were aligned with the five elements early in Chinese history, and brought into accord by inserting "neutrality" or "balance" between weak Yang and weak Yin. This alignment between Yang, Neutrality, and Yin and the five elements became central to Chinese medical and dietary treatment.

In the Chinese system all diseases are designated Yang or Yin; all foods are classified Yang, Neutral, or Yin. Respective disease categories shift in according to internal or external forces upon the body; food classifications shift depending upon season, geographical location, and method of cooking.

As with Indian and Mediterranean allopathic principles, health in the Chinese system is represented by balance and disease by imbalance. Disease states are influenced by a specific element, planet, season, climate, direction, and number; food attributes and

properties are defined by a specific color, flavor/taste, and smell, and by ingestion of specific animals and plants. Parts of the body, whether hollow or solid organs, sense organs, tissues, or body orifices, are identified with strong or weak Yang, neutrality, or strong or weak Yin. In addition, body secretions, human attributes, and emotions are aligned.

The first Chinese medical-dietary text to discuss alignment, disease, food attributes and use in therapeutics is entitled the Nei Ching. The date of this document is controversial. Some have argued, uncritically, that the Nei Ching is the oldest medical book in the world, and that the author was the legendary Yellow Emperor of China who ruled c. B.C. 2697-2597). Others have claimed that the text was compiled after B.C. 1000, while more recent opinion suggests that the Nei Ching does not predate B.C. 200. In any case, the Nei Ching is considerably younger than the Caraka-Samhita medical document of ancient India and is younger, too, than many Greek Mediterranean medical-dietary accounts.

Regardless of this age dispute the Nei Ching is among the most important medical-dietary texts to survive from antiquity. It is organized as a dialogue between two persons, Huang-ti and Ch'i Po, who explore disease topics and appropriate therapies. Their dialogue examines medical and dietary questions of balance and imbalance where they identify and discuss the universal and essential elements; body organs are classified, nutritional needs discussed, as well as dietetics and use of food in disease prevention.

The Nei Ching reveals that each body organ has a characteristic odor, taste, color, and emotion. Each produces a product, then shapes and controls another organ. Each presents a conduit or opening to another organ, converts or transforms its fluid into another, supplies a body action or attribute, and nourishes a body component.

One passage in the Nei Ching specifies how geographical direction and color effect health and where disease first appears in the human body:

EAST: the color of east is green. East controls the liver and opens the eyes. The taste of east is sour, its smell is offensive and fetid; its [element is wood]; its animal is chicken; its grain is wheat; its planet is Jupiter; its number is eight. Imbalance in east produces diseases of the nervous system.

SOUTH: the color of the south is red. South controls the heart and opens the ears. The taste of south is bitter, its smell is scorched; its element is fire; its animal is the sheep; its grain is glutinous millet; its planet is Mars; its number is seven. Imbalance in south produces diseases within the five viscera.

CENTER: the color of center is yellow. Center rules the spleen and opens the mouth. The taste of center is sweet, its smell is fragrant; its element is earth; its animal is the ox; its grain is millet; its planet is Saturn; its number is five. Imbalance of the center produces sickness at the root of the tongue.

WEST: the color of west is white. West rules the lungs and opens the nose. The taste of west is pungent; its smell is foul and putrid; its element is metal; its animal is the horse; its grain is rice; its planet is Venus; its number is nine. Imbalance of west produces sickness in the back.

NORTH: the color of north is black. North controls the kidneys and opens the lower body orifices. The taste of north is salty; its smell is rotten and evil; its element is water; its animal is the pig; its grain is bean [sic.]; its planet is Mercury; its number is six. Imbalance of north produces sickness within body cavities.

Buddhism entered China in the 1st century A.D. and influenced disease concepts and medical diagnosis. The structure of Buddhism contrasted sharply with Confucianism and Taoism. The Buddha (Gautama Sakyamuni) had been dead for nearly 500 years when the Buddhist missionaries crossed the Himalayas and entered the Middle Kingdom. Buddhism held that humans were measured by their actions and deeds (karma), that the purpose of life was to suffer endless cycles of birth-death-rebirth and ultimately reach salvation (nirvana). The Buddha taught that the endless cycles could be halted if the Eightfold Path was followed: 1) correct attitudes, 2) correct behaviors, 3) correct concentration, 4) correct efforts, 5) correct intentions, 6) correct living, 7) correct speech, and 8) correct views.

Buddhist views and philosophies contrasted sharply with existing Chinese medical traditions. The Buddhists proposed a system of four elements (compared to the Chinese five), and argued that each element, if imbalanced, could produce 101 diseases, for a total of 404 illnesses not based upon Yang-Yin considerations.

By the 6th century A.D. Chinese Buddhist medicine held there were six causes of disease: 1) imbalance of the four elements, 2) imbalance of nutrition, 3) excessive meditation, 4) demons, 5) evil gods, and 6) improper conduct during previous lifetimes. Each category of illness was treated using different therapeutic approaches. Imbalances caused by elements and improper foods were treated using diet and drugs. Other avenues of therapeutics included patient counseling, breathing regulation, exercise, amulets, personal introspection, confession, and acts of contrition.

Chinese physicians, from antiquity to today, have diagnosed illness by observation, listening to the patient speak, questioning the patient, and by palpating the wrist pulse. Physicians, whether in China or San Francisco, continue this system and observe the patient's skin color and texture, as well as the patient's eyes, nose, mouth, teeth, and

tongue. The patient's hands and nails are felt, breathing monitored, manner of speaking and type of cough (if present) are evaluated. The patient is questioned as to daily activities, type and quantity of exercise, and diet. After evaluation a diagnosis is made, Yang-Yin and organ associations determined, then treatment prescribed based upon allopathic principles.

Half-way around the world from China in southwestern Europe -- at about the same time in history -- allopathy was introduced to the Iberian peninsula by Roman colonists several centuries before the Common Era, where it evolved in relative isolation for nearly 900 years.

On July 19th, in the year A.D. 711, Muslim armies massed in northwestern Africa and invaded Iberia. One result of this African invasion of Western Europe was an astonishing cultural transformation. In the centuries after the Muslim invasion there evolved in Iberia a unique medical system that integrated Christian, Jewish, and Muslim traditions. These complementary systems of allopathic medicine and "hot-cold" concepts were taught at universities and medical schools at Cordova, Granada, and elsewhere.

Mediterranean allopathic, "hot-cold" concepts formed the core of Iberian medicine during the Middle Ages. These concepts, familiar to the educated were brought to new territories wherever Portuguese and Spanish explorers and armies landed in successive centuries. Patterns of Iberian allopathy and use of food to treat disease spread widely during Portuguese conquests in Africa and Asia. Iberian allopathy, likewise, transferred westward with Columbus in 1492 and diffused throughout the Caribbean. During the next 25 years as Spaniards arrived in the New World, whether administrators, conquistadors, priests, or teachers, they brought with them the rich allopathic heritage of Iberia.

The earliest accounts and descriptions of the New World written between 1492-1612 are widely available for inspection and may be found in most libraries. These accounts contain wonderful descriptions of food, diet, and medical practices and excite nutrition historians even in 1998. One intriguing issue is that some accounts reveal that allopathic, "hot-cold" concepts pre-existed in Central America within the Aztec civilization well before arrival of the Spanish in 1519. Did Aztec allopathy develop independently or not? If the latter, then who brought allopathic principles to the New World before 1492?

In Aztec tradition health was perceived as "balance," illness and disease as "imbalance." Equilibrium, however, was not easy to maintain since balance changed seasonally and in accord with human age, gender, personality, and exposure to environmental temperature extremes. The Aztecs also conceived a structured world based upon eighteen sets of paired terms. Especially prominent within these dichotomies were

designations for "hot-cold," "dark-light," "humidity-drought," and "weakness-strength." Of the eighteen sets of paired terms identified at the core of Aztec allopathy at the time of contact in 1519 -- fourteen of the eighteen sets paralleled the Chinese pattern of prescientific dietetics. The suggestion that Chinese, or perhaps Indians, established trade contact before 1492 is not new, and has been debated for almost 50 years. We may wish to discuss this issue further during the question-answer session at the end of our symposium.

Troops commanded by Hernando Cortes landed on the east coast of Mexico in March, 1519. Within two years they subdued and conquered an empire and established the European colony of New Spain. In successive decades Spanish administrators founded medical schools where European concepts of allopathy and diet were taught for the first time on the American continent.

The most important surviving source on Aztec medicine is the Badanius Manuscript. Its author was an Aztec teacher at the College of Santa Cruz founded by the Spanish in 1536 in a southern suburb of what is now Mexico City. The manuscript presents a wealth of information on Aztec disease concepts, religion and world view, and outlines the healing properties of local animal, vegetable, and mineral medicines. Excerpts from the Badanius Manuscript reveal the Aztec viewed food as an important component of the healing process, and that "hot-cold" assignments pre-dated Spanish colonial contact.

Spanish allopathic medicine arrived in the New World where the Mediterranean pattern blended with an existing Aztec allopathic tradition. The allopathic legacy flourished within Mexico, then diffused northward into regions that encompassed the southwestern portions of the United States of America. One of these regions was California -- where it continues to flourish today in 1998.

In conclusion, less than 150 years ago concepts of disease and illness transmission in the United States of America were primarily allopathic and based upon "hot-cold" balance. The allopathic approach to medicine, declined in Western thought after Pasteur's publication on anthrax in 1877. After Pasteur, allopathy was replaced by the concept of "germ theory" -- and disease transmission via the "unseen world" of germs -- won out.

A gap grew and widened between the practitioners of Western science and allopathy. As the gap grew into a chasm, characterized by scientific arrogance, many science-trained physicians lost the fine art of communication. Some physicians and nutritionists -- because they were trained as scientists -- saw little reason to identify and understand non-scientific approaches to health and diet practiced by ethnic peoples. As science advanced, communication between client and health-nutritional professionals declined still further until even today medical and nutrition counseling sometimes has become a dialogue of the deaf, where physicians-nutritionists speak to their clients and exchange smiles, but recommendations cannot be implemented and are not understood.

At the University of California, Davis, and throughout this state, students in the dietetics major are not exposed to allopathic principles. Medical students at UC Davis are not taught how to place scientific information into allopathic constructs for improved dietary and medical counseling.

As a result, effective nutrition education in California has become a casualty in the battle between science and non-scientific approaches to medicine and nutrition. Another outcome is that many millions of Californians have little faith in the Western Medical Model and have returned, instead, to a range of both classical and non-classical healing practices; some of these are appropriate, others are dangerous. And in the darkness -- along the periphery -- lurk the frauds and charlatans who continue to take advantage of consumers who seek information on health and diet.

Do not doubt it: allopathy flourishes in California in 1999. It is practiced from Ukiah to San Diego; it thrives in coastal cities of our state and within the heartland of our Central Valley. It thrives and exists side by side with the Western Medical Model throughout our state.

We Americans -- and especially Californians -- are not a homogeneous people; not all believe in science. Physicians, nutrition educators, dietitians, even university professors, encounter cultural diversity and scientific skepticism daily. During the past 500 years cultural and religious diversity have enriched America. Diversity has remained our national strength -- but with diversity comes complexity and the need to explain scientific concepts using culturally correct examples that are easily understood. One pattern of dietary advice and nutritional counseling is not suitable to all.

So.... please remember the following allopathic concepts: feed a cold; starve a fever.... and remember, too.... when you're hot, you're hot; when you're not, you're not.