



THE THEORY OF HUMOURS REVISITED

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ABSTRACT

The Humoral Theory held sway for more than two thousand years, as it offered a rational and understandable model for the workings of the human body in both health and disease. It incorporated the concepts of the elements (fire, water, air, and earth) and the qualities (heat, coldness, moistness and dryness) which offered a viable explanation of both the microcosm (the body) and the macrocosm (the environment). It also merged with the constructs related to the person's temperament and lifestyle, and offered valuable clinical support in diagnosis, treatment, and recuperation. It fitted seamlessly into treatment modes such as phytotherapy, cupping, massage, and hydrotherapy. The Humoral Theory was ultimately superseded by the doctrine of specific aetiology, more popularly known as the Germ Theory. Even so, many aspects of the Humoral Theory are still relevant today, especially in the fields of physiology, neurochemistry, and personality research.

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INTRODUCTION

The Humoral Theory was the Grand Unified Theory of its time. For more than 2000 years, until modern medicine made its debut, it offered a sound, satisfactory, and understandable explanation of everything from changing weather to different personalities, from preparing food to health and healing (Boussel *et al*, 1982, Mabey *et al*, 1988). The Theory survived in the medical sphere for millennia, mute testament to its robustness and practicality. It remained a major influence on medical and pharmaceutical practice in Europe until well into the 19th century, as a model for workings of the human body both in health and when afflicted by disease of the mind and the body (Filipczak, 1997). It remains one of the fundamentals of Unani-Tibb, alongside Physis, temperament and the Lifestyle Factors (Bhikha & Haq, 2000, Bhikha & Saville, 2014).

Historical evolution of the humoral theory

The doctrine of humours first surfaced in Ancient Greece, although the original concept probably goes back to the time of the Pharaohs in Egypt (Abu-Asab *et al.*, 2013). The Theory was one of the main pillars of the teachings of the Greek physician-philosopher Hippocrates (460-370 BCE), the early

pioneer of medical practice. Justly described as the *Father of Modern Medicine*, he and his colleagues brought medicine out of the realms of superstition, magic and the supernatural into the spheres of rationality and logic. He also incorporated the humours into his Temperament Theory, affirming that the humours affected our personalities and behavioural traits. From Hippocrates onward, the Humoral Theory entered the mainstream of medical thought, largely thanks to its adoption by Galen (Poynter, 1962) [c.130 - c.200 CE] (another Greek titan of medicine), Muslim scholars such as Ibn Sina (980-1037 CE), and Western European herbalist practitioners such as Culpeper [1616-1654 CE]. Galen too accepted that the humours and their proportions were responsible for a person's state of health. He also considered that food and drink were major factors, although herbs, phlebotomy, and surgery had their places when dietotherapy proved ineffective (Tobyn, 1997). The Humoral Theory, in its various versions, was the predominant medical healing paradigm for many centuries, and spread to Medieval Europe following the Crusades (Siraisi, 1990). It remained so until the 16th, and in some parts, the 18th Century. The theoretical nature of the humoral system merged perfectly into a period of intense logical, theological, and philosophical debate and exploration. It fitted in with the divine order of things, with balance and imbalance, harmony and discord, and health and disease as basic linked concepts

(Lindberg, 1992). Greek, Roman, and later Muslim and Western European medical philosophers and pioneers took readily to it. Intellectual giants such as Augustine, Thomas Aquinas, and Ibn Sina conferred their seal of approval on it. Apart from some changes made in the light of emerging biological knowledge and medical experience, it became so established as a way of thinking about the person in particular and the natural world in general that its validity was not questioned, and it was virtually unchallenged for centuries.

Nature of The Humours

Origins: The concept of humours probably came from observing what happens to freshly drawn blood, which when left alone separates slowly into four distinct fractions. The major red portion was termed the sanguinous (blood) humour, the white layer is phlegm, the yellow-coloured froth on top is the yellow bile, and the heavy part that settles down is the black bile. The Humoral Theory is based on the notion of the primordial *elements*. In ancient Greece the material universe was thought to be made up of four elements: fire, air, water, and earth. These were regarded as the building blocks of all creation. Knowledge of natural systems was further extended by the concept of *qualities*. The four qualities were heat, dryness, moistness, and coldness. Each of the four elements is described by two of those qualities, which links the elements. Fire is considered *hot & dry*, air is *hot & moist*, water is *moist & cold*, and earth is *cold & dry*. These concepts of elements and qualities apply easily to most areas of personal experience – the heavenly bodies, seasons of the year, climatic influences, daily time periods, properties of food and drink, herbal medicines, tissues and organs in the body, physiological activity in the body, symptoms of disease, and many other objects and phenomena. Some are shown in the table below:

Relationship of elements and the human body

	Fire	Air	Water	Earth
<i>Qualities</i>	Hot & dry	Hot & moist	Cold & moist	Cold & dry
<i>Season</i>	Summer	Spring	Winter	Autumn
<i>Humour</i>	Yellow bile	Blood	Phlegm	Black bile
<i>Temperament</i>	Bilious	Sanguine	Phlegmatic	Melancholic
<i>Body tissues</i>	Nerve tissue	Muscles, blood	Lymph, fluid, fat	Ligaments, skeleton
<i>Body function</i>	Metabolism	Respiration	Nutrition	Formation
<i>Faculty</i>	Attractive	Digestive	Propulsive	Retentive
<i>Sense</i>	Smell	Taste	Sight	Hearing
<i>Mental state</i>	Anger	Humour	Submission	Stubbornness
<i>Emotion</i>	Excitement	Cheerfulness	Apathy	Depression
<i>Flavour</i>	Bitter	Sweet	Salt	Sour
<i>Age</i>	Youth	Childhood	Maturity	Adulthood
<i>Time</i>	Afternoon	Morning	Night	Evening

Definition: The word ‘humour’ is from the Latin for liquid or fluid. Humours are the second most important source of life, after *pneuma*, the fundamental source of vital energy which is linked to atmospheric oxygen. The humours are vital essences that course through the blood vessels, exert control over the body’s metabolism, and influence the functions of all physiological systems.

Description: Not every liquid in the body is a humour. Body fluid and humour are not identical, interchangeable, or synonymous. For instance, urine, sweat, and body water are liquids, but not humours. Also, the sanguine humour associated with blood is not the liquid drawn by hypodermic needle. Nor is the phlegmatic humour the same as saliva, mucus, or phlegm itself. In reality, there are four major humours: blood, phlegm, and both yellow and black bile.

However, within these groups there are many – hundreds, or even more – of a minor nature. All four humours are synthesised from the digestion of food and drink, and transformed in the liver. Every level of organisation in the body, from simple cells to tissues, to organs, to the whole body, is infused with varying amounts of these four humours. They exist at the vascular level, the intracellular level, and within the cells themselves.

Composition: A humour is an admixture of a range of macromolecules, mainly proteins, polysaccharides, and nucleic acids, derived from their precursors, amino acids, sugars, and nucleotides. Enzymes, electrolytes, hormones, and a number of organic molecules and co-factors are also present. They also vary in terms of acidic or basic nature. Different humours vary in their spectrum of these biochemical components, and in their range of concentrations. The composition of humours in a particular person comprises all four humours, with the sanguinous humour having the largest concentration. This is followed by the phlegmatic humour, then by the bilious humour, and finally by the melancholic humour. Each person has an ideal or unique humoral balance made up of the four humours. Just as each of us has a unique temperament with associated qualities, we also have corresponding ratios of humours. For example a person with a sanguinous dominant temperament will have slightly more of the sanguinous humour. Similarly, a person with a dominant melancholic temperament will have slightly more of the melancholic humours.

Types: The humours are traditionally classified according to:

- **Nature** - whether normal, so have a specific function; or abnormal, with no specific value, so need to be expelled.
- **Function** - whether they are beneficial in maintaining metabolic harmony or are detrimental to the body’s activity.
- **Status** - whether primary, or circulatory; or secondary, or resident within tissues.
- **Location** - whether within organs or in cells as protoplasm.
- **Structure** - whether fine or coarse.

Although there is a clear link between a particular humour and a specific body fluid, the humour is to a large extent separate from the fluid, and independent of it. Gruner calls them ‘quasi-materials’. The sanguinous humour represents the nutritive aspect of blood, the phlegm humour corresponds to the cooling aspects of metabolic activity, the bilious humour relates to heating and stimulating aspects of metabolic activity, and the

melancholic humour corresponds to the drying, concentrating and solidifying aspects. Another feature of this close relationship between the humour and the body fluid is that a disturbance or imbalance in the humour will manifest as an abnormality in the fluid itself. This is the basis of a number of Tibb diagnostic tests.

Formation: Humours are derived from the food and drink we consume. After they have been ingested, they are digested, and the nutrients carried in the bloodstream to the liver, where they are metabolised to provide the basic substances needed for sustenance. Different foods have varying abilities to produce different humours. Cold foods are phlegm-forming, while hot foods promote the formation of bilious humour. Treatment of specific diseases by dietary means (*'dietotherapy'*) is therefore an important aspect of therapy as it is supported by the Humoral Theory.

Roles: The humours have three main functions

- To maintain the *temperamental balance*.
- To provide *nutrition* for the maintenance of the body's complex structure.
- To regulate and control the energy requirements of all the body's activities.

Al-Abbas describes humours as: "... those moist and fluid parts of the body which are produced after the transformation and metabolism of the aliments; they serve the function of nutrition, growth and repair; and produce energy, for the preservation of the individual and his species. A right proportion and inter-mixture (homeostasis) of them, according to the quantity and quality constitutes health, whereas an imbalance according to the quantity or quality and irregular distribution leads to disease" (Ahmed, 2009).

He interprets the role of humours in the following manner:

- The basis of health is the right proportion and specific equilibrium of humours according to their quality (and quantity) i.e., homeostasis in the internal environment. As long as this homeostasis is maintained, the body remains healthy. This, he says, is the basis of health and preventative medicine.
- When the normal proportion and specific equilibrium of humours is altered, the internal environment reaches a state of imbalance, and thus disease develops. This, he says, is the basis of aetiology and pathology of disease.
- When the wrong proportion and altered equilibrium of humours is corrected, health can be recovered. This, he says, is the basis of treatment.

The Humoral Theory therefore deals with all aspects of disease, from aetiology and pathology, to its prevention and treatment.

Humours and Temperament

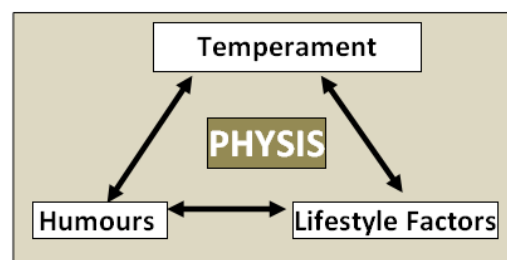
Galen invoked the theory of humours into his particular interpretation of temperament. He developed a realistic classification, and sought physiological reasons to explain different behaviour in different people. A person's temperament reflected the influence of particular humours: if the sanguine humour was dominant, then the person was more likely to be optimistic and buoyant. Similarly, the other humours had their own characteristic personality traits –

phlegmatic (sluggish, relaxed), bilious (quick-tempered, assertive), and melancholic (low-spirited, dejected). Any major or lasting imbalance between the qualities leads to illness or an exaggerated personality feature. Historically, therefore, the concept of temperament was part of the Humoral Theory. Temperament is a measure of a person's psychological nature, physical form, genetic make-up, and other factors which combine to define a person's uniqueness. Ibn Sina extended the description of temperament to include emotional factors, mental rigour, moral position, physical activity, and even dream quality. The Humoral Theory accepts that just as everyone has a unique temperament, so they also have an ideal humoral balance. Their combination of qualities should be similar to those of their temperament. Tibb claims that as long as the overall quality of the humours is in line with the overall quality of the temperament, inner harmony will be maintained. Whilst the overall quality of an individual's temperament is fixed, the overall quality of humours is subject to change arising from the major Lifestyle Factors. A right proportion according to the quantity and quality constitutes health, whereas an imbalance according to the quantity or quality leads to disease. Humoral imbalance affects the person's temperament both qualitatively and quantity, and favours the reproduction of pathogens, leading to overt infection.

Tibb recognises that each individual is unique: Although each person is as unique as his/her fingerprint, Tibb divides people into a combination of four broad categories: *sanguinous*, *phlegmatic*, *melancholic*, and *bilious*, with a dominant and a sub-dominant temperament. (Note: Tibb is unique in including a sub-dominant aspect to a person's temperament, as it finds this is a useful construct in diagnosis and treatment.) Each temperament has qualities of heat, coldness, moistness, and dryness, with every combination having an overall quality. A person with a combination of a dominant sanguinous and sub-dominant bilious temperament will have an overall quality of heat. Similarly, the phlegmatic/melancholic temperament will have an overall quality of coldness.

Interaction between humours, temperament and qualities:

There is a constant interplay between the humours, temperament, Lifestyle Factors, and Physis. Although the temperament is fixed, the balance of the humours and lifestyle factors is constantly changing. This is a result of changes to the diet and other aspects of lifestyle, such as sleep, physical activity, breathing efficiency, and stress levels. This dynamic relationship influences the overall qualitative state, which Physis is constantly striving to balance to maintain homeostasis.



Physis and the humoral theory

Physis is the body's innate capacity for self-healing and maintaining homeostasis. It is the governor of all living tissue. Every person is characterised by a unique combination of

humours. These are not present in rigid form, or in an unchanging amount. They fluctuate continually in both composition and amount within the body, responding to changes in food and drink, climate and the seasons, physical activity and other lifestyle factors, and as we get older. Most changes are corrected promptly as soon as they occur, without any disruption to the person's daily activities. This can be compared to a helmsman making minor but regular changes to a ship's course as it sails across the sea, to counteract the effects of cross-winds and opposing currents. When someone's humours are in balance, a state called *homeostasis* exists. This is the biological basis for good health. This balance is maintained and regulated by Physis. If it is weakened by, for instance, exposure to malign forces such as pathogens, or by a faulty, deficient lifestyle, a disturbance to the humoral balance will probably develop. If not corrected properly this may progress to a particular disease. Physis is the body's principal administrator, responsible for day-to-day metabolic regulation, and for immediate and long-term survival. It can be regarded as the *doctor within*, the driving force behind inner- or self-healing. All nature-based therapies and treatments, whether physical 'hands-on' techniques such as cupping, herbal remedies, dietary measures, or lifestyle reform, are obliged to encourage and support it, and so contribute to restoring humoral balance.

Humours and Health

The human body has a natural tendency, regulated by Physis, to heal itself and restore balance in humours. Minor or temporary imbalances cause the person discomfort; major imbalances, or the appearance of abnormal humours, lead to illnesses. According to Tibb, 'Health is harmony between the humours'. It is only when the person's humours are unbalanced that the ground is made fertile for disease to develop. To achieve and maintain perfect health, the person's four humours have to be of the right consistency and in perfect balance (*homeostasis*) in terms of the overall quality of the humours in relation to the overall quality associated with the person's temperament. This is described as *eucrasia*, a term originally employed by Hippocrates. Disease and other disabilities develop when this balance becomes disturbed by poor management of one or more Lifestyle Factors, which results in humoral imbalance. This situation is termed *dyscrasia*. The actual qualities of the humours have an important effect on the nature of disease. If moistness, for example, is the dominant quality, then phlegmatic disorders such as bronchitis may develop. Or, if the dominant imbalance is due to an excess of heat, then disorders such as arthritis and heart problems may appear. A lack of balance or surplus in the humours could also have an adverse effect on a person's temperament.

Humours and Mental health

An imbalance of humours, or the presence of abnormal humours, can also affect our mental and emotional health. The Humoral Theory allowed simple explanations for complex emotional states. People with different temperaments tend to be associated with characteristic emotions.

- Where the *sanguinous humour* is dominant, a person tends to have an optimistic outlook on life, experiencing 'positive' emotions such as joy, enthusiasm, and affection. On the 'negative' side, when

this humour is excessive or abnormal, then euphoria, obsessive behaviour, narcissism, and self-indulgence will appear.

- Where the *phlegmatic humour* is dominant, 'positive' emotions appear as 'laid back' attitude, contentment, sensitivity, sentimentality, and good nature. Typically 'negative' ones develop when there is humoral imbalance or abnormality, when anxiety, fear, apprehension, and lethargy develop. Such people are slow to anger and quick to forgive.
- Someone with dominant *bilious humour* exhibits intolerance, a challenging, demanding, or caustic demeanour, an irritating manner, and envy. When excessive or abnormal, emotions such as anger, hostility, frustration, irritability, and resentment arise. If prone to constant bouts of anger, this person is more likely to be put at risk of disease than a melancholic person.
- Someone with a dominant *melancholic humour* exhibits typical emotions such as sadness, pessimism, worry, and caution. When excessive, these emotions register as depression, guilt, and panic.

However, the emotions are linked to the person's *dominant* temperament. As everyone possesses a *sub-dominant* temperament as well, the person's true emotional profile is rather more complicated in the real world.

Humours and Disease

A person's physical well-being and mental health depend on a dynamic balance between the four major humours. The Humoral Theory provides the basis for Tibb clinical pathology. When the quality and quantity of the humours is in balance, health prevails. When out of balance, disease will appear. This situation therefore provides the theoretical basis for Tibb therapeutic practice, especially when treating metabolic diseases such as diabetes, or infectious diseases such as tuberculosis. The Humoral Theory forced physicians to consider patients as a whole during diagnosis and treatment.

In the times of Hippocrates and Ibn Sina, individual diseases were not described in the same way that modern medicine classifies them now. Diseases were not seen as forces or entities separate from the person's body or mind, but instead were viewed as manifestations of humoral imbalance. The physicians of the period, trained in Humoral Theory alone, relied not only on knowledge of medical texts, but also on their professional intuition and personal understanding of the patient. Hormonal imbalance was evident from the patient's input, and from inspection of the blood, urine, and other body fluids.

Example of common ailments and their corresponding humoral status are shown as examples below

Relationship between Physis, Temperament, Humours and the Lifestyle Factors

Disease	Humoral imbalance	Associated qualities
<i>Cystitis</i>	Sanguinous	Hot & moist
<i>Sinusitis</i>	Phlegmatic	Cold & moist
<i>Hepatitis</i>	Bilious	Hot & dry
<i>Osteo-arthritis</i>	Melancholic	Cold & dry

Many factors adversely affect our humoral composition and balance. Organ malfunction is a major one, but many relate to

an unwise lifestyle: poor food consumption, continuously breathing poor quality air, sleeping badly, and exposure to unseasonal weather. The Humoral Theory provides information which indicates whether or not a person may be susceptible to certain disorders. Other aspects of daily life are also important in affecting humoral balance. A person's occupation, his or her geographical location, and the time of year, for example, also have an effect on the humoral balance. If this balance is upset by a life event (such as the onset of puberty or pregnancy), or a change in weather or season, or restriction in food due to a famine, or an epidemic, then a health crisis will surely follow. Physical destruction by antimicrobial agents may result in a temporary decline or even total eradication of the pathogenic micro-organisms. However, if the imbalance of the humours is not corrected and maintained, the disease will recur, either at the original site, or elsewhere in the body. In addition, the effects of 'new-to-nature' drugs on the humours can be dramatic and far-reaching. They can lead to new humoral imbalances, which in turn bring out short-term side effects and longer-term intolerance.

Humours and Infection

In ancient times, Tibb practitioners were unable to detect microbes, as present-day technology was not available. Even so, they were well aware that we are surrounded by potentially pathogenic organisms in the environment (macrocosm) at all times, and that infection, contagion, and epidemics were due to these minute, airborne entities. Infections and parasitic infestations were not blamed on abnormal humours, but on these airborne micro-organisms. They considered that these had a detrimental effect on the patient's Physis, leading to a diminished response to the pathogenic microbes. The patient's tissue became disordered, and therefore more susceptible to the impact of the microbes. Until quite recently, rather than trying to overcome the offending microbes, the initial response to a troubling infection was two-fold: strengthen Physis, and intensify personal hygiene.

They were aware that Physis, which can draw on a large number of defence mechanisms, was generally quite capable of repulsing the majority of attacks by environmental pathogens, and that due to its protection people rarely succumbed fatally to infection. Practical treatment was based firmly on supporting Physis with herbal and other therapies, which were deemed to restore humoral balance back to normal. Tibb practitioners accept that trying to eradicate these pathogens is a forlorn pursuit. It is a much more effective strategy to strengthen the body's defences. In Tibb the causes of disease (not only infection, but others of metabolic origin, for example) arise from a massive persistent humoral disturbance. Treatment is therefore directed at restoring humoral harmony, with little or no need to identify the pathogen culprit. One advantage of this approach is that treatment does not await laboratory data indicating susceptibility of the offending organism to antibiotics. Tibb treatment of the patient's humoral imbalance in infectious disease is patient orientated. Conventional modern medicine, on the other hand, is pathogen focused. Tibb views illness from infectious agents differently to that of conventional medicine. Without the technology of today, Tibb physicians were unable to recognize the link between an infective agent (viruses, bacteria, fungi, etc.) and disease (such as the link between *M. tuberculosis* and tuberculosis, and *Pneumococci*

and pneumonia). However, they were aware of the nature of infection, or, as they termed it, *putrefaction*. According to Tibb principles, infection from micro-organisms is only possible when an imbalance occurs at the humoral level, so providing a benign environment in the body's tissues and fluids for the pathogenic microbes to survive, multiply, and spread. This goes some way in explaining why some people are susceptible to bacterial infection, whereas others are not. Very often blood tests for infection are negative, even though typical symptoms persist. This indicates that humoral imbalance exists within the body, but not to the extent that infection has set in. Many so-called viral infections are indicative of this initial humoral imbalance. The typical signs and symptoms of colds and flu are soon reversed by Physis, provided that the humoral imbalance does not allow for infection to set in. Management of the Lifestyle Factors effectively assists Physis in restoring balance that will overcome most 'viral' associated conditions. *Humoral Theory vs Germ Theory*. These can be reconciled, as they are not mutually contradictory. Tibb asserts that the real cause of most chronic disease is the person's adoption of a faulty lifestyle. An imbalance in a person's lifestyle is detrimental to the person's well-being. A faulty lifestyle leads to the weakening of the person's Physis. In effect, the antibodies which should be made available to counteract the invading pathogens are not synthesised. The microbe becomes established in a fertile culture media, and is able to release damaging toxins.

Correcting Humoral Imbalance

There are numerous ways a humoral imbalance can be corrected in someone suffering from a particular ailment. They are without exception benign, as whatever they are – herbal medicines, hands-on therapy, or changes to diet and lifestyle – have to support Physis.

The Lifestyle Factors, or Essential Causes, are:

1. **Atmospheric air and breathing**
2. **Food and drink**
3. **Bodily movement and repose**
4. **Sleep and wakefulness**
5. **Mental or psychic activity and rest**
6. **Evacuation of waste and retention of nutrients**

Food and drink: The person's daily diet is acknowledged as essential for optimum well-being, and valuable in any healing process. The reason is that humours are formed from the food and drink consumed. It also provides the basis for preventing chronic diseases developing, and offers the person close control and responsibility for his state of well-being. Preventing disease is therefore the key priority in the health/disease scenario.

Herbal remedies: are commonly used for chronic, recurring disorders of digestion, breathing, reproduction, and the skin, and as a general tonic. They are also used to treat victims of epidemics such as cholera and the plague, and injuries sustained in accident, conflict, and warfare. Local herbs, unique to a particular geographic location, have been identified, and certain parts of the plant formulated into a dose-form for use by the patient. This approach was very popular until quite recently, until the Germ Theory became dominant.

Today, herbal medicines are enjoying a revival of interest for a number of very good reasons. These include increased confidence in the remedies' authenticity, lack of side effects, better long-term tolerance, cost factors, convenience, personal empowerment, and the patient's personal worldview.

Physical measures: Traditional forms of treatment could be excessively intrusive, usually reflecting over-enthusiasm in the healer. They often involved considerable pain, discomfort, and even physical trauma. For example, the patient often underwent purging with laxatives and emetics, the skin could be blistered with hot poultices, and bloodletting could be performed. This latter technique was performed either as a treatment for a build-up of excessive humour (called *plethora* or *congestion*), or, as commonly done, as a seasonal tonic. The amount of blood let from the patient usually varied according to the ailment being treated and the enthusiasm or belief of the practitioner. For a patient already weakened by a serious ailment, these attempts at cure could be more threatening than the disease itself. Early in the 19th century, bloodletting was largely discredited in many parts of the world, as its inherent dangers became undeniable. The Humoral Theory gradually lost favour with physicians.

The decline of the humoral theory

During the early part of the European Renaissance the humoral concept of disease was gradually rejected. This came about from a series of advances in technology during the 17th and 18th centuries, especially in instrumentation such as the microscope and stethoscope, and the observation that in disease the organs are primarily affected rather than the humoral balance. The *anatomical concept of disease* became dominant, and this provided a more direct explanation of the patient's signs, symptoms, and pathological organ changes. The decline of the Humoral Theory accelerated further with the introduction of the 'Doctrine of Specific Etiology'. This affirms that for every identified disease or disorder there is a single specific cause, and this specific cause gives rise to only one specific disorder. At the time this theory emerged, diseases due to infections were rife, so this theory, when applied to infections, became more popularly known as the 'Germ Theory'. This states that microscopic organisms (viruses, bacteria, fungi, and virions) or parasites are the agents directly responsible for disease. Support came from a clinical observation (by Simmelweis, 1818-1865) which accelerated the decline of the Humoral Theory. This observation was that female patients who had just given birth were dying of childbirth fever, or *septicaemia*. The culprit was identified as an infection caused by poor attention to hygiene applied by the attending obstetrician. The connection between micro-organisms and disease was made. At roughly the same time, disease was confirmed (by Virchow, 1821-1902) as arising in the body's tissues, rather than in the blood supplying them. The rise of clinical psychology and psychiatry in the late 19th and early 20th centuries gradually replaced the idea of temperament and its relationship to humours.

Humours and Modern Medicine

Medical historians see in the Humoral Theory a foretaste of metabolic disorders, first described by Garrod, and its importance in medical science.

The blood group system, pioneered by Landsteiner, is in many ways an extension of the Humoral Theory. The discovery of messenger substances such as hormones, growth factors, and neurotransmitters also suggest that the theory is not yet moribund. The Humoral Theory has certainly left its mark on our society. We still refer to persons of good humour or bad humour, and speak of their sanguine, phlegmatic, bilious, or melancholic temperament. There are vestiges of Humoral Theory in current medical language, with *humoral immunity* used when referring to substances such as hormones and antibodies, involved in immunity, which circulate in the bloodstream. The term *blood dyscrasia* is used for a blood disease or abnormality.

Summary

The Humoral Theory is an elegant and logical explanation which explains how the body works, in sickness and in health. From its introduction in ancient times by Greek-philosopher clinicians such as Hippocrates and Galen, it became the dominant medical philosophy until well into the 19th Century. The basic premise of the Theory was that the body contained four major humours, or bodily fluids, which were kept in harmony, or homeostasis, by Physis, the body's internal administrator. Health was characterised by balance between the person's major humours, and ill-health by a lack of balance. Humoral composition also defined a person's temperament, a construct combining personality, physique, and behaviours.

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