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Study of clay–organic complexes

Manjaiah *et al.* (**page 915**) report the importance of the interaction of clay minerals and organic substances to form clay–organic complex of varying stability. Study of complex formation between clay and organic substance has been approached from two directions. The first by isolation of complex from soils and their characterization. The second approach by allowing organic substance and their fraction to react with known clay species or vice-versa and examining the resulting complexes. The composition of organic substances and carbon distribution in clay–organic complexes was studied by employing several techniques like ^{13}NMR, combination of pyrolysis and field ionization mass spectrometry curie-point pyrolysis gas chromatography/mass spectrometry, differential X-ray diffraction analysis, scanning electron microscopy, etc. The synchrotron-based near-edge X-ray fine structure offered valuable insight into organic carbon forms associated with clay–organic complex, individual particles extracted from soil and individual pores within microaggregates on spatial scales below 50 nm resolutions. Conceptual models of clay–organic complexes and molecular model structures of clay–organic complexes would help in better understanding the humic properties and their interactive processes at atomic and molecular basis, organic carbon and nitrogen dynamics in soils and facilitate in modelling of the fate and transport of contaminants, stabilization mechanisms of carbon in soils as active, intermediate and passive pools.

Ayurveda

A distinctive feature of many traditional forms of medicine, including that of ayurveda, is a more holistic approach to health and disease. What makes ayurveda distinct compared to many other indigenous medical systems is that it is a highly systematized medical system resting on proven theories and thousands of years of documented clinical observations and more importantly, with unbroken and successfully continuing clinical practices. The basic vedic sciences have given rise to the theoretical framework of ayurveda, under which it has put together an enormous body of observational data and has developed its own methodologies to understand the human body and also diagnose and treat diseases.

In contrast to modern medicine, ayurveda looks beyond the purely structural and reductionistic viewpoint by considering health and disease as a complex interrelationship of various forces and functions. In ayurveda, health, a complex interplay between the body and mind, is reflected at all levels, ranging from the cell to the whole organism. Disease is caused by internal imbalances, which can stem from a wide variety of factors and lead to a number of conditions, from short perturbations to chronic disease processes.

Although a number of theories contribute to ayurveda, the theory of *tridoshas* (*vata*, *pitta* and *kapha*) runs as an undercurrent in all ayurvedic understanding of health, ill-health and treatment of diseases. The article, in addition to explaining the science and logic behind ayurveda, has also focused on the distinctive approach of ayurveda to health and disease (**page 908**). Rama Jayasundar has presented a coherent description of ayurveda in a contemporary framework and has tried to demystify, in particular, the concept of *tridoshas*, which form the basis of ayurveda.

Fluid inclusion studies on barite from Hutti Gold Mines

Barite is known to occur in several Archean greenstone-hosted gold deposits and 'oxidizing fluids' are considered as an important in their formation. Nevin and Pandalai report (**page 955**) late-stage, post-gold mineralization, cavity-filling veins with barite from the Hutti gold deposit of Karnataka. The occurrence of barite and calcite in the form of well-preserved crystals, the cross-cutting relation of the veins with the

laminated quartz and the large-sized fluid inclusions in the barite with near-perfect negative crystal outlines indicate that they have formed by late-stage hydrothermal activity at Hutti. Microthermometric and laser-Raman studies show that the barite has formed from aqueous fluids of relatively high salinity. The salinity of the fluid varies from 10 to 22 equiv. wt% NaCl with most values clustering between 14 and 22 equiv. wt% NaCl. In contrast, the laminated quartz veins that host gold have formed from fluids of low salinity that generally range between 0 and 14 equiv. wt% NaCl. The source of oxidized fluids that led to deposition of these post-ore veins at Hutti opens up the scope for investigating post-ore hydrothermal activity in the Hutti schist belt.