

## In this issue

### An upswing for fringe medicine

Hippocrates said, 'It is more important to know what sort of person has a disease than to know what sort of disease a person has'. Disregard of this axiom, possibly, is a prime reason for the annoyance of health-care consumers with modern medicine in recent times.

There is a substantial increase in the proportion of the population who demand to be treated as persons and not as 'cases' or not as a diagnosis by their treating physicians. They are not averse to try alternative forms of medical treatment. To their delight, there is cumulative evidence that many alternative medical treatments are more economical, less invasive and less harmful and may be more effective than conventional medical therapies.

Alternative medicine is many things to most people. Folk remedies, herbal medicines, massage, energy healing, biofeedback, acupuncture, homeopathy and a whole lot of other treatment strategies are included under complementary or alternative medicine (CAM).

The World Health Organization estimates that nearly 80% of the world's population rely on alternative medicine as their primary form of health care. The increasing popularity of CAM is revealed in a report in the *Journal of American Medical Association*. A few years ago the journal estimated that expenditure for alternative medicine professional services was 21.2 million US dollars in the year 1997, an increase of 45.2% from the year 1990. The out-of-pocket expenditure was estimated to be 12.2 billion US dollars, which exceeded the 1997 out-of-pocket expenditure for all hospitalizations in the US. Recent reports in reputed medical journals validating alternative medical therapies against the gold standards of evidence-based medicine by double-blind randomized clinical trials have stifled long-standing skepticism about CAM. Hearteningly, now almost three-fourths of American medical schools offer elective courses in CAM. Alas! Homes for many alternate healing

concepts are yet to emulate the movement.

Sanjoy Kumar Pal surveys the expanding world of CAM in this issue (**page 518**). Given that conventional medicine with emphasis on techniques and technology cannot solve all the health problems, CAM, based on the inherent healing power of nature that humans possess, deserves a trial. Admittedly, 'There cannot be two kinds of medicine – conventional and alternative. There is only medicine that has been adequately tested and medicine that has not, medicine that works and medicine that may or may not work' (Angell, M. and Kassirer, J. P., *N. Engl. J. Med.*, editorial, 1998, **339**, 839–841). On the horizon are holistic hospitals.

C. C. Kartha

### Can soil help to reduce greenhouse gas?

Carbon dioxide (CO<sub>2</sub>) is one of the main culprits of greenhouse gas emissions linked to global warming. CO<sub>2</sub> contributes to 60% of total global warming caused by greenhouse gas emissions. Industrialization has brought with it the bane of fossil-fuel burning, deforestation, automobile exhaust, etc. This has added to an increase in the concentration of atmospheric CO<sub>2</sub>. It is vital to reduce greenhouse gas emissions such as CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O for arresting global warming and climate change. Is there a way to do this? Can 'soil' help? The article entitled 'Emission of carbon dioxide from soil' by Monika Rastogi *et al.* (**page 510**) looks at this and other aspects, such as the mechanisms that regulate emission of CO<sub>2</sub> from the soil to the atmosphere. It also provides a clue in regard to 'soil as a sink for CO<sub>2</sub>' by sequestering carbon (C) in the soil.

The article highlights the carbon reserves on the earth, stating that the world's soils hold about twice as much carbon

compared to the atmosphere. The various processes by which CO<sub>2</sub> is released from soil are described. These processes can occur either through biological or non-biological means. The article also details the various factors that affect CO<sub>2</sub> emission from the soil. Some of these factors are temperature, moisture, diurnal, seasonal and spatial variability; even factors such as soil texture, pH, salinity, etc. affect emissions. Application of different types of fertilizers can also affect the emission and the type of crops grown or the methods of tillage used can also influence CO<sub>2</sub> emission from soil.

While throwing light on understanding the close link between the soil, its characteristics and CO<sub>2</sub> emissions, the authors give insight into variations in ecosystems that in turn can affect emissions. The soil flux of CO<sub>2</sub> is described by taking examples of peat lands, forest areas and desert ecosystems. Of these, forests act as a major sink of atmospheric CO<sub>2</sub> and in this process Indian forests and plantations remove about 0.13 Gt of CO<sub>2</sub> per annum from the atmosphere.

The authors also provide measures for carbon sequestration in soils with specific reference to India. The basic strategies involve increasing soil and sub-soil organic carbon content, thereby increasing soil fertility. Such changes in the quality of soil content can give way to better soil and water management practices, including vegetation, crop and livestock management. Other basic strategies suggested are for increasing soil biodiversity, e.g. afforestation, crop coverage, etc. and improvement of soil biotic activity by application, for example, of soil conditioners. As suggested in the article the primary aim of utilizing such measures is to enlarge the sinks for CO<sub>2</sub> and one option suggested is to increase the net fixation of atmospheric CO<sub>2</sub> through C sequestration in the soil. In India, where 45% of the geographical area is utilized for agricultural purposes, implementing such options could help stem increases in global greenhouse gas emissions.

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