

restriction of supply of the necessary components. The use of the potassium equivalent ( $K_2[K_2Ca(PO_3)_6]$ ) could well be more effective as this compound could enter directly into the tumour cells inducing calcification within the cells where the estimated pH value is 6.8. The concentration of calcium in serum is in the range  $0.88\text{--}1.04\text{ g l}^{-1}$  ( $0.022\text{--}0.026\text{ mol l}^{-1}$ ) and in intercellular fluid is in the range  $0.4\text{--}1.6\text{ g l}^{-1}$  ( $0.01\text{--}0.04\text{ mol l}^{-1}$ ). The mean of these ranges are 0.96 and 1.0 g of calcium per litre, respectively. An injection fluid with a calcium concentration of twice this value i.e.  $2.0\text{ g l}^{-1}$ , would be a suitable initial investigative concentration. The solubility of calcium in sodium hexametaphosphate is 45 g of calcium per 100 g of hexametaphosphate [3,4]. The proposed test solution will, therefore, require 0.8 g of calcium carbonate and 4.5 g of sodium hexametaphosphate dissolved in a litre of water. The spread of the sequestering agent throughout the metabolism will occur. The toxicity ratings for sodium hexametaphosphate are ORL-MUS LD50 7250 mg  $\text{kg}^{-1}$ , IPR-MUS LD50 870 mg  $\text{kg}^{-1}$ , SCU-MUS LD50 1300

mg  $\text{kg}^{-1}$ , IVN-MUS LD50 62 mg  $\text{kg}^{-1}$ . Taking a typical adult body weight as 60 kg, the concentration above is equivalent to 75 mg  $\text{kg}^{-1}$  is slightly above the intravenous limit. Removal of the calcified tumours by surgical techniques should be possible in most cases.

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# Transcendental meditation does not predispose to epilepsy

Dear Sir,

As a doctor with nearly 30 years active interest in research and medical applications of Transcendental Meditation (TM), I have encountered no evidence to support Jaseja's speculations that meditation might predispose to or adversely affect epilepsy (*Med Hypotheses* 2005;64(3):464–7).

I have consulted with over 3000 people practicing TM. None of these individuals developed seizures since learning TM. A few patients had idiopathic or secondary epilepsy prior to learning TM: none had a seizure during the practice; none showed adverse effects on seizure control; one whose seizures were previously inadequately controlled showed improved control after learning TM; all experienced benefits from TM for general health.

I maintain communication with many physicians (including neurologists) interested in medical applications of TM, some with experience far wider

than my own. I have received no reports of adverse effects of TM on epilepsy or epileptogenesis, nor is there any such indication in over 600 studies on TM's physiological, psychological, and behavioral effects conducted at over 200 research institutions in 30 countries, involving thousands of subjects.

Jaseja provides no clinical evidence to support his claims, relying on sensational language ('grave possibility and risk'; 'can contribute tremendously to epileptogenesis'), and the unsupported assertion that meditation is being promoted as a treatment for epilepsy (news to me). EEG changes during TM are clearly distinct in character and etiology from epileptiform discharges [1].

TM is fully complementary to orthodox medicine and improves many aspects of health, including markedly reduced need for medical treatment across 18 major disease categories (including neurological disorders), better cardiovascular health, and comprehensive improvements in mental well-being and health-related behaviors [2–4].

These benefits should not be denied to patients, including those facing the special challenges of epilepsy, on the basis of tenuous speculations unsupported by any credible evidence.

Yours faithfully  
Dr. Roger Chalmers

### Competing interest statement

Roger Chalmers is a full-time locum general practitioner and has derived more than 99% of his income from UK National Health Service clinical work over the past 9 years. He became a teacher of Transcendental Meditation in 1975, and has lectured widely on research and medical applications of this and related techniques over the past 28 years. From 1982 to 1996 he was directly involved with institutions publicly advocating TM, holding a variety of non-salaried academic positions and co-editing volumes 2–4 of collected research papers on TM.<sup>1</sup> From 1987 to 1991, he worked in full-time private medical practice utilizing the complementary system known as Maharishi's Vedic Approach to Health, which includes TM, alongside modern medicine.

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## Hypnosis and meditation: Similar experiential changes and shared brain mechanisms

Newberg and Iversen have recently proposed in Medical Hypothesis a neural model underlying meditative states [1]. Here, we draw attention to the excellent correspondence between hypnosis and meditation both in terms of their experiential qualities and their underlying brain mechanisms.

Hypnosis has been characterized by changes along several dimensions of subjective experience [2,3] including mental relaxation and absorption. Mental relaxation refers to a fluid flow of thoughts; while mental absorption involves a shift from externally directed and active (effortful) forms of attention to internally directed and passive attention. Those changes lead to a reduction in temporal and spatial orientation. Hypnosis is further characterized by an altered sense of self-monitoring and self-agency manifested experientially by reduced resistance to alternative experiences and by feel-

ings of automaticity associated with thoughts or actions. While mental relaxation and absorption are generally considered essential to achieving meditative states, the broadening of experiential space and the altered sense of self may be more specific to certain forms of meditation [4].

Neuroimaging studies of hypnosis have identified many of the same cerebral responses posited in the model of meditation proposed by Newberg and Iversen. In both meditation and hypnosis, attention drives the prefrontal and cingulate cortices which interact with other structures including nuclei of the thalamus and brainstem as well as parietal cortices, resulting in states of decreased vigilance and increased attention. Furthermore, hypnosis studies have demonstrated distinctive associations between certain brain networks and mental relaxation and absorption [5,6]. Specifically, hypnotic relaxation