

used in these studies, and to Professor Geoffrey P. Mason, University of Victoria, for doing the statistical analysis.

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To the Editor: Because of the apparent "epidemic" that we are all seeing of coronary heart disease, and also because of the simultaneous interest of the American public in vitamin E, early in 1972, I decided to review the available medical literature on the subject. I also included some personal correspondence with some of the most famous proponents of vitamin E therapy for a multitude of medical conditions. The conclusions of my reviews and correspondence were ambiguous. Because the only conclusion that I could draw from my studies was that vitamin E was harmless, even though its benefits were questionable, I decided to place a number of my patients on vitamin E. These patients included some with arteriosclerotic heart disease, but mostly men in their mid-thirties and early forties, who were in excellent health at present and in the past. I included myself and my partner in the study. Vitamin E, in the form of α -tocopherol, was the formulation used, and the starting dose was 800 IU daily. The study was only an informal one and not controlled by any means.

After about one week on the medication I began to feel an amazing weakness and fatigue as if I were suffering from a severe influenzal syndrome — the symptoms stopped after withdrawal of the vitamin E. Still thinking that I had likely suffered a viral illness, I resumed the vitamin E, and the symptoms returned. I did not describe this effect to my partner, who also was taking the vitamin in the same dosage. When he left the office early two days in a row because he felt very tired and "sick," I described my experience. He stopped the vitamin E, and his symptoms promptly disappeared on the following day. By this time, virtually all the patients and colleagues whom I had instituted on the therapy were calling me and relating the same thing, and had to stop their vitamin E. Some, like myself, were able to tolerate the vitamin at 400 IU daily, with only minimal fatigue.

Now, in the course of my day-to-day practice of general and internal medicine, I see many people who have become obsessed with the megavitamin concept for "good health," and these people take literally handfuls of vitamins daily — usually the vitamin B complex, vitamin C and vitamin E. Many of these young people have been coming into my office complaining of very severe fatigue. Very comprehensive work-ups are done along the traditional lines: physical examination, complete blood count, urinalysis, stool examination, chest x-ray study, etc. These tests are inevitably negative, and the overpowering fatigue responds promptly to the withdrawal of vitamin E.

I wish to report this observation, though it is uncontrolled, because I cannot find it anywhere in the literature, and because my partner and I see it over and over and in the vitamin-conscious age in which we live, we shall see it more and more. We included it in our differential diagnosis of fatigue. In our busy practice we find "hypervitaminosis E" as a cause of fatigue to be less frequent than depression or menopausal syndrome, but more frequent than anemia or hypothyroidism. In young patients in whom a history is carefully taken, it ranks second only to depression in our practice. Response to withdrawal of vitamin E is dramatic.

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CANNABIS FOR ASTHMA

To the Editor: It is always fascinating that (new) discoveries are so often antedated by folk medicine. The article by Tashkin, Shapiro and Frank¹ on the pulmonary effects of marijuana recalls Henry Hyde Salter's treatise on asthma, in which he states: "The Indian hemp, *Cannabis sativa*, is much given in India as an anti-asthmatic, and among the natives has a great reputation. I can easily imagine from its physiological action that its reputation is well deserved."

In short, a hundred years ago the effect of cannabis on pulmonary

physiology that was so nicely documented with modern instruments was known on an empirical basis by the natives of India.

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1. Tashkin DP, Shapiro BJ, Frank IM: Acute pulmonary physiologic effects of smoked marijuana and oral Δ^9 -tetrahydrocannabinol in healthy young men. *N Engl J Med* 289:336-341, 1973
2. Salter HH: *On Asthma*. Philadelphia. Blanchard and Lea. 1864. p 143

SEROLOGY OF TOXOPLASMOSIS, ISOSPOROSIS AND SARCOSPORIDIOSIS

To the Editor: After the discovery of isosporan oocysts in the life cycle of *Toxoplasma gondii*, the important question of the specificity of current serologic tests for antibodies to *T. gondii* was raised by several authors. The suggestion of Stagno et al. (*N Engl J Med* 284:853, 1971) that there may be common antigenicity between *T. gondii* and *Isospora belli* has been disputed by Eaton et al. (*N Engl J Med* 288:797, 1973). Additional information indicative of an absence of any marked cross-reactivity between *T. gondii* and isospora is provided by Doby and Beaucournu,¹ who summarize earlier records (including those relating to isospora species of animals), with two exceptions.^{2,3} Furthermore, it is apparent from a number of recent papers that prior infections of isospora in cats do not influence susceptibility to *T. gondii* or vice versa.

Isosporan oocysts indistinguishable from those of *I. hominis* are shed in man after ingestion in uncooked meat of tissue cysts of *Sarcocystis fusiformis* from cattle and *S. miescheriana* from swine.⁴ As incidental to collaborative experimental work (Draper, Garnham, Hutchison, Killick-Kendrick, Markus and Siim) on sarcocystis in animals, to be published elsewhere, human serum specimens were tested in Draper's laboratory, with use of *S. fusiformis* antigen prepared by liberating cystozoites from macroscopic cysts extracted from infected bovine diaphragm. Our preliminary findings in the indirect fluorescent-antibody test suggest an absence of cross-reaction between *S. fusiformis* (in the light of present knowledge, a stage in the life cycle of *I. hominis*⁴) and *T. gondii*; persons reacting with what is apparently a positive titer (found up to a dilution of 1:1024) may prove to be (or to have been) *I. hominis* carriers. Further experimentation — e.g., inactivation of serum of adults^{5,6} — is indicated to assess the value of these results. Doby and Beaucournu,¹ using *T. gondii* antigen and serum of known carriers of *I. hominis* in the indirect fluorescent-antibody test, also demonstrated that the two protozoa are immunologically distinct.

As far as the tissue stage of sarcocystis is concerned, the specificity of various serologic tests for *T. gondii* has been confirmed by earlier workers who used serums from man and monkeys with infections of sarcocystis species and serum of sheep with *S. tenella* infections.⁷⁻¹³ Wallace,¹⁴ in studying the life cycle of an animal parasite that was either an unusual strain of *T. gondii* or a species of sarcocystis, found that this organism and *T. gondii* share a few antigens but that there is little or no cross-immunity.

It must be concluded that there are as yet no grounds for questioning the reliability of routine serologic tests for human toxoplasmosis.

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1. Doby JM, Beaucournu JC: Absence de reactions croisées en immunofluorescence indirecte entre serum de porteurs de *Isospora hominis* et antigènes *Toxoplasma*. *Bull Soc Pathol Exot* 65:404-409, 1972
2. de Andrade CM, Weiland G: Serologische Untersuchungen zur Feststellung gemeinsamer Antigene von Toxoplasmen, Sarkosporidien und Kokzidien. *Berl Munch Tierarztl Wochenschr* 84:61-64, 1971
3. Draper CC, Killick-Kendrick R, Hutchison WM, et al: Experimental toxoplasmosis in chimpanzees. *Br Med J* 2:375-378, 1971
4. Rommel M, Heydorn A-O: Beiträge zum Lebenszyklus der Sarkosporidien III. *Isospora hominis* (Railliet und Lucet, 1891) Wenyon, 1923, eine Dauerform der Sarkosporidien des Rindes und des Schweins. *Berl Munch Tierarztl Wochenschr* 85: 143-145, 1972
5. Cathie IAB: An appraisal of the diagnostic value of the serological tests for toxoplasmosis. *Trans R Soc Trop Med Hyg* 51: 104-110, 1957