

Behavior

Bruce Bower reports from Toronto at the annual meeting of the American Psychological Association

Marital tiffs spark immune swoon . . .

Husbands and wives can really get under each other's skins. In fact, new evidence suggests that nasty marital spats temporarily weaken the immune systems of both spouses, potentially boosting their susceptibility to physical illness.

Newlyweds who employ hostile tactics while discussing problems in their relationship show far greater drops in several immune measures over the next 24 hours than recently married couples who take a more conciliatory approach to problems, assert Janice K. Kiecolt-Glaser of Ohio State University College of Medicine in Columbus and her colleagues.

Wives experience larger immune drops than their husbands after an unkind exchange, the researchers note. Women may prove superior to men in detecting a spouse's hostile emotional messages, Kiecolt-Glaser suggests. Her team plans to see whether the immune decline in men reaches or surpasses that of their wives at later points in their marriages.

The Ohio State team studied 90 couples married for an average of 10 months. Participants ranged in age from 20 to 37. They described their marriages as happy. No one smoked cigarettes, drank alcohol excessively, suffered from serious physical illnesses, or exhibited signs of mental disorders.

Each couple stayed at a university research center for 24 hours. After identifying two or three topics that caused problems in their relationship, such as how to handle money and deal with in-laws, a couple spent 30 minutes trying to resolve these issues. The researchers videotaped these sessions and identified each spouse's positive and negative behaviors.

Participants gave blood samples for immunological analysis before the discussion and at the end of their stay.

Couples who held the most negative discussions—marked by sarcasm, interruptions, and criticism—displayed the steepest drops in two types of white blood cells. Moreover, mild stimulation of the immune system caused a weaker proliferation of white blood cells in hostile couples.

These changes may increase outside the laboratory, where hostility is expressed more freely, Kiecolt-Glaser contends.

. . . but hypnosis offers immune aid

Hypnosis strengthens the disease-fighting capacity of two types of immune cells, particularly among people who enter a hypnotic trance easily, report Patricia Ruzyla-Smith of Washington State University in Pullman and her co-workers.

"This is the first solid evidence that hypnosis can modify the immune system far more than relaxation alone," asserts Washington State's Arreed F. Barabasz, who helped conduct the study.

The psychologists recruited 33 college students who achieved a hypnotic trance easily and 32 students who had great difficulty doing so. Volunteers viewed a brief video describing the immune system and then were assigned to one of three groups: hypnosis, in which they listened to a hypnotic induction asking them to imagine their white blood cells attacking "germ cells" in their body and then performed this exercise through self-hypnosis twice daily for one week; relaxation, in which they floated effortlessly for an hour in a large tank of warm water containing Epsom salts and repeated the session one week later; or neither method.

Students who underwent hypnosis displayed larger jumps in two important classes of white blood cells than participants in the other groups. The greatest immune enhancement occurred among highly hypnotizable students in the hypnosis group.

Further research must establish whether hypnosis bolsters immunity in moderately hypnotizable individuals and in people suffering from diseases such as AIDS and cancer, Barabasz says.

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Biomedicine

Richard Lipkin reports from Chicago at a meeting of the American Chemical Society

Cosalane halts HIV infection

In the ongoing search for chemicals that inhibit HIV, the AIDS-causing virus, a medicinal chemist reports a novel, promising compound.

The new chemical, cosalane, stops HIV from infecting human immune cells grown in the laboratory, reports Mark S. Cushman, a medicinal chemist at Purdue University. Cosalane halts HIV infection by preventing an HIV surface protein called gp120 from attaching to a membrane receptor on white blood cells, Cushman says.

Infection occurs when HIV attaches to and fuses with these cells, inserts its genetic material, and then replicates itself. That's where cosalane intervenes: Once the virus starts to bind to an immune cell, cosalane inhibits the "binding and postbinding fusion events," Cushman explains. Cosalane is a derivative of aurintricarboxylic acid (ATA), a chemical once used in the Swiss dye industry. Chemists found ATA effective at stopping the AIDS virus in the test tube, but it was too toxic for an AIDS treatment. Thus Cushman and his colleagues sought variations of ATA with fewer harmful side effects.

Cosalane has proved the most potent and least toxic of more than 70 ATA-like compounds tested so far, Cushman says. It is "active against a variety of HIV-1 strains and HIV-2, including strains that have proven themselves resistant to AZT [zidovudine] and other reverse transcriptase inhibitors." And cosalane shows little toxicity to noninfected cells, a potential improvement over drugs now used to treat HIV infection.

In addition, new drug-resistant strains of HIV have hampered AIDS treatment, Cushman says. But since cosalane uses a mechanism of action different from that of zidovudine and has proved toxic to some of those strains, Cushman believes this new compound may lead eventually to better AIDS drugs.

Cushman and researchers at the National Cancer Institute in Bethesda, Md., are now trying to produce large quantities of cosalane for preclinical testing. If all goes well, he says, studies in humans may begin within a year.

Mossy memory-booster for Alzheimer's?

For hundreds of years, Chinese folk doctors have known an intriguing but mysterious fact: Drinking tea brewed with a type of club moss (*Huperzia serrata*) can perk up people's memories.

Western doctors pooh-poohed this folklore—until recently. About seven years ago, researchers at the Shanghai Institute of Materia Medica isolated a natural compound in the tea that is "a potent inhibitor of acetylcholinesterase," says Xu-Chang He, a chemist with the Chinese Academy of Sciences in Shanghai. Acetylcholinesterase, an enzyme, breaks down acetylcholine, a key chemical messenger in the brain involved in memory and awareness.

The Chinese finding galvanized Alzheimer's researchers in the West. Now the chemical, called huperzine A, is the subject of intense research at the Mayo Clinic in Jacksonville, Fla., reports Giuseppe Campiani, a medicinal chemist there.

Huperzine A is proving to be one of the most potent and selective acetylcholinesterase inhibitors under study for the treatment of Alzheimer's disease, which damages memory and affects 4 million U.S. residents, says Campiani. Alzheimer's patients suffer a depletion of acetylcholine. Huperzine A, like the drug tacrine (THA), prevents acetylcholinesterase from breaking down this essential chemical, thus raising levels of acetylcholine in the brain and improving memory.

Huperzine A is a "more effective, more specific agent than THA," says Alan P. Kozikowski, a Mayo chemist heading the huperzine A research. Mayo, he adds, has licensed use of huperzine A to Interneuron Pharmaceuticals, in Lexington, Mass., which is seeking FDA permission to test the compound in humans in 1994.

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