Immune Defense and Repair Systems in Biologic Medicine: Clinical Relevance of Biological Response Modifiers in Autoimmunity Diagnosis, Treatment, Tests and Interpretation

Part 3

by Russell Jaffe, MD, PhD

Editor's note: Written in 1987, this article is presented as a classic yet timely article for today's health professional. This is the final (third) part in this series. Contact information is updated.

Toxicant Metabolism

The specific disease doctrine is the grand refuge of weak, uncultured, unstable minds. There are no specific diseases; there are specific disease conditions. Florence Nightingale Notes on Nursing

Avoidance of potentially toxic substances, especially those that impair immune function, is part of the process of health enhancement. For many people, commonly encountered substances must be appreciated for their strong biologic effects that are adverse to the impaired immune system and what can be done to avoid or mitigate these insults. These substances include:

- caffeine-containing substances (e.g., coffee, black tea, cocoa, and colas)
- nicotine-containing substances (tobacco in all forms)
- alcohol above modest amounts (> 2 ounces per day)
- nitrates (especially the butylated compounds used as a recreational drug)
- amphetamines
- barbiturates
- narcotics
- phencyclidine (PCP)
- pesticide residues
- solvents (from recreational drug, occupational, or hobby exposure)
- heavy metals, (e.g., lead, mercury, arsenic, cadmium, nickel, and aluminum)

Both the individual’s use of and attraction to these compounds are important sources of information in the process of improving immune-system and overall health.

Low-temperature saunas can be useful in lowering the body's burden of lipophilic toxins (Figure 3). Provocative testing for tissue mineral, including toxic metals, is useful in

Figure 3:
Low-Temperature Saunas: Decrease of Lipophilic Toxicants

Purpose: To mobilize and eliminate nonbiodegradable, fat-soluble, potentially immunosuppressive compounds.

Method: Use of low-temperature saunas is highly recommended. Which equipment to use is a matter of personal preference and can be home “sweat boxes,” home saunas, or commercial saunas; all are acceptable. There are two components that may differ from prior experiences with saunas: the temperature is lower (105-115° F), and the time is longer (45-90 minutes daily at least 5 days per week).

There is work which suggests that using this technique can eliminate fat-soluble residues of PCBs, pesticides, and similar possible metabolic uncouplers or immunologic suppressants through the skin, especially when combined with proper transport cofactors (the antioxidants and B-complex such as that found in comprehensive formulas). The principle is simple: the body’s fat must be warmed to increase its solubility; the warmed fat must be transportable to the sweat glands, which excrete fat; the process must continue long enough for appreciable “fat sweat” to occur; the temperature must be low enough that the person does not lose significant amounts of water or electrolytes; the sweat oils must be vigorously washed off. We find glycerin soaps (such as Neutrogena, Black Soap, and similar “superfatted” soaps) the most effect here. A loofah sponge to gently scrub is also helpful.

Results: Decrease in the stored total body burden of possibly immunosuppressive fat-soluble nonbiodegradable material. This external low-temperature sauna has a net effect of “cooling” the body.

Interpretation: From the recent, preliminary studies done, one can directly measure such excretion (using mass spectrometry). Based on the known potential of these compounds to competitively inhibit neurotransmitter, hormone, and endocrine function, it seems reasonable to reduce the body’s burden of these chemicals. In the absence of quantitative studies, we recommend that this program continue for 3 months on a 5-7 day/week basis and be followed by a 3 day/week schedule for at least 6 months.

Note: It is important to ensure that excreted oils be vigorously removed from the skin surface before they reabsorb. Following the sauna and scrub, we find that a cool to cold shower is invigorating.
determining the role of nutritive and toxic metals in disposing one to chronic disease (Figure 4).\textsuperscript{132} Heavy metals are particularly important because they can compete, often preferentially, with other minerals for the active site of metalloenzymes, resulting in inhibition of the enzyme activity as occurs with mitochondrial metabolic uncoupling.

Therapeutic Biofeedback

We are learning animals. Our associations (the amount of positive or adverse situation perceived) with experience (consumption of a food or other contact) color the effect on our immune defense and repair systems. The contingent link of associations with experience – perhaps particularly the first experience – is such that on each subsequent intake, the effect of the experience is repeated and reinforced. Under laboratory control, animal models have shown the capacity to adversely or favorably influence immune competence.\textsuperscript{134–138} We are also learning how to disconnect these reinforcing linkages.

When adverse experience becomes state-bound with consumption of foods, adverse effects on the immune system can ensue.\textsuperscript{138–141} Properly applied therapeutic biofeedback can reset the body response mechanisms.\textsuperscript{142} This can be particularly useful in reversing the links to environmental exposures, including food and chemicals, especially when the offending substances have been accurately identified.\textsuperscript{143} An added dimension is the increasing recognition of the link between food consumption (e.g., carbohydrates) and neurotransmitters (e.g., serotonin).\textsuperscript{143–146}

Therapeutic biofeedback can be a useful aspect of stimulating the intrinsic repair mechanisms of the body and resetting learned distress patterns both in animal models and in human subjects contingently associated with foods or other experiences.\textsuperscript{147–152}

### Figure 4: Mineral Provocation Test for Essential and Heavy (Toxic) Metals

**Purpose:** To determine the body's burden of mobilizable, potentially toxic minerals.

**Method:** A short course of D-penicillamine (Cupramine; De-Pen) or N-acetyl-D-penicillamine is prescribed by your health professional. During this time, you collect a 24-hour urine. The urine is submitted to a clinical laboratory for analysis of heavy metals, to include lead, mercury, cadmium, nickel, aluminum, and arsenic.

**Program:** Take 500 mg (2 capsules of 250 mg each) D-penicillamine or N-acetyl-D-penicillamine with each meal and before bed for 3 days. This is a total of 2 grams each day for 3 days based on a dose of 30 mg/kg/day.

Starting on the morning of the second day, collect in a heavy-metal-free container (usually provided by the doctor or the laboratory) all your urine for the next day (a full 24-hour cycle). It is quite important to collect all the urine. If you miss a sample, restart from the beginning. You can pour out what was collected and begin again using the same collection container. Take the entire collection to the laboratory as soon as possible after completion. It is desirable, though not necessary, to keep the urine refrigerated during the collection period.

Because of short-term effects on other minerals, this specimen should not be used for calcium or other mineral-balance studies. The specimen can be used to check kidney function and to analyze for most homiones, neurotransmitter metabolites, etc.

This short course of D-penicillamine avoids the rare side effects of longer-term therapeutic doses of the drug. Of course, if you note any adverse response, notify your health professional immediately and discontinue taking the medication until otherwise instructed.

**Interpretation:** Each laboratory has an applicable reference range for each mineral assayed. Elevation above the range reported by that laboratory indicates increased tissue stores of that element. Determine the role of nutritive and toxic metals in disposing one to chronic disease. 

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Immune Defense and Repair

and influences endocrine biological rhythms.\textsuperscript{164-168}

Phytotherapy

Nature's ever open book ... come to us, page by page, word by word, and letter by letter, in the form of living human beings that are technically called patients.\textsuperscript{169,170} Application of modern bioassay techniques make possible the establishment of standardized, consistent, active therapeutic preparations. The lack of standardized, assayable preparations was a major limitation until the recent application of high-technology sampling and preservation techniques combined with traditional experience.\textsuperscript{171-173} The best documented immunomodulator natural products include:

- echinacea (Echinacea angustifolia), whose constituents include glycosides, polysaccharides, and polyacetylenes (which may be particularly important for biological activity), with actions including production of interferons and active lymphokines, and antiviral activity\textsuperscript{174};
- goldenseal root (Hydrastis canadensis radix), whose berberine and other alkaloids show antifungal activity against Candida species\textsuperscript{174} and antiprotozoal activity against Giardia lamblia\textsuperscript{175-176};
- licorice root (Glycyrrhiza glabra radix), whose actions include interferon stimulation and thymic stimulation due to anticortisol effects\textsuperscript{177,178};
- mistletoe (Visicum album), which stimulates cortical lymphocytes of the thymus, perhaps from its lectins and polysaccharides\textsuperscript{179,180}, and
divated the alternate complement pathway.\textsuperscript{181,182-184}

Figure 5:
Photobiology for Immunoregulation: A Regulator of Brain Rhythms

During the day, certain brain rhythms are maintained by fluctuations of light intensity and spectrum. Recent research links mood changes to seasonal and circadian fluxes. Other studies suggest that seasonal depression may be reduced by exposure to appropriate lighting sources. The sun produces a spectrum of color generated by refraction. Most mechanical sources produce color by pigment subtraction. In contrast, dichromatic sources, which are the most suitable for photobiologic effects, use materials of differing refractive indices to generate color. Both visual and nonvisual pathways are employed.

Program: The person sits 4 to 6 feet from the face of a green light for 20 minutes twice daily. This is typically done in the morning and early evening. A socket-clamp light holder can facilitate positioning of the color source. During this time, other activities (such as deep breathing, relaxation reflex, guided imagery, range of motion exercises, certain reading) can be performed simultaneously. The person need not look directly at the light. Deep brain structures and chemical pathways can be health-adapted by this action.

If indicated by clinical experience, yellow, amber, or blue dichromatic lights can be arranged to shine on the back, chest, abdomen, or other specific area of the body. The same position and time conditions apply. Several lights can be used simultaneously. It is best if these are the sole source of illumination.

This program is based on the early work of Babbitt, Jadhiali, Dharmawara, and others, and the more recent studies by Rosenthal and Lewy.

Other promising agents include:

- wormwood (Artemisia annua), whose artemisinin has activity against malaria and perhaps other protozoa\textsuperscript{185,186};
- astragalus root (Astragalus mongholicus or Hoantha cy radius), which enhances phagocytosis by macrophages, reticuloendothelial cells, and interferon production\textsuperscript{187,188};
- barberry bark (Berberis vulgaris cortex), another rich source of berberine alkaloids with antifungal and antiprotozoal activity and antipyretic action\textsuperscript{189-191};
- burdock root (Arctium lappa radix), whose insulin polysaccharides stimulate phagocytosis and show antimutagenic action in cell culture\textsuperscript{193}; and
- St. John's wort (Hypericum triquetrifolium turra), which contains hypericin and pseudohypericin, both of which show antiretroviral activity in cell cultures.\textsuperscript{169}

The area of botanical natural products chemistry is in active development with the application of modern and traditional technologies to clinical syndromes of immune dysfunction. Clinicians should expect the agents to be processed under conditions that preserve activity and to have bioassays available from their suppliers. In addition, agents should be certified free of contaminants, including pesticides, fungicide, and fumigant residue; heavy metals; and degradation compounds that might interfere with the active agents.

Personal Attitude

... you can change your mood by changing how you think. There is a second major approach to mood elevation that is enormously effective. People are not only thinkers, they are doers, so it is not surprising that you can substantially change the way you feel by changing the way you act. There's only one hitch — when you're depressed, you don't feel like doing much.

David Burns, MD, Feeling Good
A person’s attitude and mood amplifies all other actions done. Following the health-enhancement steps above gives positive feedback that affirmative steps are being taken. This creates a window of opportunity through which one can address internal conflicts, ambivalences, and problems of self image. Many studies have shown the important benefit to immune defense and repair of a well-grounded hopefulness. A note of caution: there have been attempts to reduce a mechanical process or to impose upon people an external pattern of thinking. This can have short-term apparent benefits, but in our experience over years, it is the active process of therapeutic biofeedback, a suitable active visualization, or the use of guided imagery and music that have brought enduring beneficial changes.

Support System

... what is most important, it is also you who will make the choices in the future. Whatever you did in the past, you did for the best reasons you knew at the time. But today, you have more alternatives to choose from. And tomorrow, you'll have even more. There's no reason why you have to repeat your choices of the past — unless they proved to be the best for you.

Harry Browne, How I Found Freedom in an Unfree World

A regular support group of peers is a most valuable component of evoking the sustained human healing response. Affiliating with a group of like-minded people to focus on issues, have sounding boards for problems of living, and be available as concerns surface is most valuable. We especially recommend that people have someone within their support system to whom they reach out immediately upon the awareness of doubt, fear, anxiety, or similar emotion so that the issue can be dealt with promptly (“while the fish is still flopping”) and the cost to immune defense and repair systems can be minimized. It is often a new experience for people to realize that they can help another individual simply for the sake of being helpful and that the other person is similarly available to them.

Various research studies support this approach and document the importance of such a perspective. The field of psychoneuroimmunology is rapidly emerging, and several useful reviews exist.

The Human Healing Response

... Create a balanced perspective, one that recognizes that attitudes such as a strong will to live, high purpose, a capacity for festivity, and a reasonable degree of confidence are not an alternative to competent medical attention but a way of enhancing the environment of treatment ... (the) physician's communication skills need no longer be regarded as theoretical assets. The wise physician favors a spirit of responsible participation by the patients in a total strategy of medical care.

Norman Cousins

The above ten sections provide one systematic approach to enhancing immune defense and repair systems. The above suggestions employ caring and competent, helpful and hopeful, grounded and reasoned, informed and inspired perspectives.

The capacity of the human organism to respond to opportunity, given the correct biochemical, perceptual, and emotional support systems, is most remarkable. While it is often overlooked as the placebo effect, we prefer to recognize this capability as the human healing response.

Various studies and reviews can provide background insight into which of these approaches is best suited to an individual. In particular, active meditation can have beneficial physiologic effects.

For notes, please see the online version of this article on TownsendLetter.com.
Immune Defense and Repair

Discussion

Modern medicine will become really scientific only when physicians and their patients have learned to manage the forces of the body and the mind that operate in vis medicatrix naturae.

Rene Dubos, introduction to Norman Cousins's Anatomy of an Illness

The immune system is our repair, defense, and communication system. All specific functions depend upon this interactive surveillance system. Restoration of immune competence depends upon identifying elements in the person's biochemistry and perception that need strengthening, and avoiding those elements that diminish competence. More easily said than done, the above is a guide. The emphasis given here is on practical distinctions, which separate what works from what merely glitters, much the way a gemologist distinguishes gold from pyrites. The patient benefits when the art and science of vis medicatrix naturae are appreciated and applied with an emphasis on the lowest-risk/highest-gain approaches available, setting aside all considerations other than the person's full welfare.

Dr. Russell Jaffe received his AB, MD (with senior thesis honors), and PhD (in biochemistry and physiology) from Boston University, all in May 1972. Dr. Jaffe served his medical internship at University Hospital and joined the US Public Health Service, being assigned to the Clinical Center of the National Institutes of Health, in June 1973. While at the Clinical Center, Dr. Jaffe served his residency in clinical pathology. He is board certified in clinical and subspecialty certified in chemical pathology. Dr. Jaffe remained on the permanent senior staff of the NIH Clinical Pathology Department, where he continued method innovation and did collaborative research with the Laboratory of Experimental Atherosclerosis (of the Heart, Lung, and Blood Institute).

Concurrently, Dr. Jaffe's interested in the mechanisms of health and the evoking of the human healing response led him to apprentice in the cultural systems of various cultures, including such healing arts as acupuncture, meditation, and a variety of related therapeutic approaches. In addition, Dr. Jaffe did innovative studies of platelet and other blood cell biochemistry and metabolism. Among the tests he developed are the early colon cancer-screening test using occult blood detection not interfered with by vitamin C consumption and a variety of tests related to the blood clotting and immune defense systems. Dr. Jaffe developed the first method of measuring cell-mediated immunity using a modified ELISA system in a lymphocyte blastogenesis brief cell culture. This LRA by ELISA/ACT provides an "immunologic fingerprint." Dr. Jaffe has contributed over 40 scientific articles or book chapters. He has been invited to lecture in Europe, South America, Canada, Mexico, and many states of the nation. Dr. Jaffe received the J. D. Lane award for original research from the USPHS, the Merck Sharp and Dohme Excellence in Research Award, and various recognitions for his investigations. He is a fellow of the Health Studies Collegium and director of Serammune Physicians Lab, Virginia, now ELISA/ACT Biotechnologies LLC as well as PERQUE LLC.

Reprints are available upon request.

Resources

PAR38 dichromatic 150-watt spot- or floodlights: In the US, both Sylvania and General Electric produce these items. Quality lighting suppliers, particularly those specializing in outdoor or theatrical lighting (where true color rendering is important), should either carry or be able to obtain these lights for you. They are available at the following suppliers:

- Washington, DC: Eck Electrical, 1135 Okie Street NE, 202-526-9505
- Rockville, MD: Ben Lust Theater Supply, Rockville Pike and Nicholson Road, 301-468-9128
- Fairfax, VA: Interstate Electric, 8435 Lee Highway, 703-560-2500
- New York City: Just Bulbs, 212-228-7820, and Rosetta Lights, 212-719-4381.

Of particular interest is the book Sunlight, by Zane R. Kime, MD, MS ($11.95; World Health Publications; Box No. 408, Penryn, CA 95663).