This report synthesizes three decades of investigations into the determinants of healthy and unhealthy immune defenses and repair responses. The function of immune defenses and repair systems (IDRS) in good and in ill health are compared and contrasted. An integrative approach to interdependent neuroimmunohormonal, digestive, and detoxification systems is included.

The Alkaline Way is a three-component approach that can be useful in addressing autoimmune and immune dysfunction conditions such as fibromyalgia and chronic fatigue syndrome, through an individualized approach that includes:

- lab testing for inflammation, detoxification, and antigens to food and chemicals;
- an alkaline diet including supplements and self-testing to monitor pH levels;
- lifestyle management – with an emphasis on exercise and mindfulness.

The program described has achieved impressive rates of remission, demonstrating how forgiving and responsive the human body can be when biochemistry is restored to balance. Better outcomes are achieved by concurrently applying three interventions that reaffirm the body’s inherent healing abilities by removing obstacles to recovery.

An Epidemic of Epidemics of Autoimmune Diseases

More than half of all American adults and a rapidly growing proportion of young people experience some type of autoimmune condition. Within the body, this reflects a shift from an immune system that is resilient, self-regulating, and self-restoring into an imbalanced, aggressive, and self-attacking mode known as autoimmunity (AI).

There is considerable diagnostic overlap of AI with chronic and degenerative diseases. It is increasingly clear that most heart disease and chronic vascular conditions are the result of loss of repair ability due to excess cell acid (metabolic acidosis) and oxidative stress due to deficits in essential antioxidant and buffering nutrients that cause losses of tolerance in the immune defense and deferred repair (IDRS dysfunction).

Case examples and outcome studies in fibromyalgia muscle pain, chronic fatigue immune dysfunction syndrome (CFIDS), and other autoimmune conditions have been previously reported.

Acidosis, oxidative stress, and inflammation – Metabolic acidosis, oxidative stress-makers, and repair deficit inflammation are the antecedents of autoimmune and immune dysfunction which functionally and metabolically overlap with debilitating chronic conditions that affect or are affected by the thyroid, adrenals, or reproductive glands (See Figure 1, p. 47; Table 1).

The Alkaline Way Program

The Alkaline Way plan described here assesses an individual’s metabolic balance. Sustained remission routinely emerges when these approaches are consistently applied.

1. Laboratory Tests: Assess Causes More Than Pathologic Consequences

Inflammation, Detoxification, and Immune Function

In ill health, tolerance and homeostatic resilience are reduced and in some cases lost. AI and immune dysfunction occur commonly, and commonly together. They reflect the impairment or loss of immune defenses and repair tolerance and competences.

A Health Studies Collegium estimate is that loss of tolerance and homeostasis accounts for one-third of all chronic disease. These are the inflammatory conditions, the conditions of cumulative repair deficit that reduce life quality and increase costs of mostly palliative care. Inflammatory markers of repair deficit include elevations of:

- sedimentation rate (sed rate)
- unexplained elevation of fibrinogen, ferritin, and microalbumin, among other inducible proteins
- C-reactive protein (hsCRP)
- tumor necrosis factor (TNF)
- oxidative stress markers such as oxidized LDL/HDL and 8-oxo-guanine
- prealbumin in urine
- IL-2, IL-6, and IL-12, among other cytokines
Food and Chemical Antigen Reactions

**Immune system tests of delayed allergy** – Various clinical tests are currently in use for assessing an individual’s adverse response to environmental antigens.\textsuperscript{12} Antibodies capable of inciting a delayed response include IgA, IgM, or IgG. Only when antibodies are reactive do they provoke symptoms; neutralizing, protective antibodies are helpful.\textsuperscript{13,14}

Antibody assays are often performed for immunoglobulin G (IgG).\textsuperscript{13} This has the advantage of examining the immunologic memory of the person. Note that most IgG antibodies are helpful; only a minority of antibodies are harmful.\textsuperscript{14} Four subclasses of IgG have been identified, which have different biologic functions and vary independently in different clinical conditions.\textsuperscript{15,16}

Clinical interpretation of total IgG antibodies against a specific antigen can be a challenge.\textsuperscript{17} For example, only IgG4 is cytophilic for mast cells.\textsuperscript{18} Thus, some IgG antibodies are protective and others reflect an adverse response.\textsuperscript{19} Measurement of IgG antibodies omits information about IgA and IgM offenders and requires multiple subclass assays to provide the most accurate clinical information.\textsuperscript{20}

Immune complexes can also be assayed through a variety of techniques, each with its own methodology limitations.\textsuperscript{21}

**The LRA by ELISA/ACT technology** – This lymphocyte response assay has been developed to evaluate the hypothesis that the causes of autoimmunity included exposures to foods or other chemicals to which the body had become hypersensitive, marked by unhealthy antibody, immune complex, or T cell lymphocyte responses.

This concept has been successfully tested in controlled outcome studies on fibromyalgia muscle pain and chronic fatigue syndrome, as well as diabetes. Clinical data indicate that all autoimmune conditions respond

---

**Table 1: Autoimmune Syndromes and Associated Antigen Type**

<table>
<thead>
<tr>
<th>Clinical Disorder</th>
<th>Antigens Specific to Host Components\textsuperscript{a}</th>
<th>Intracellular</th>
<th>Receptor</th>
<th>Membrane</th>
<th>Extracellular</th>
<th>Plasma Protein</th>
<th>Hormone</th>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Lupus Erythematosus</td>
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<td>+</td>
<td>+</td>
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<td></td>
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<tr>
<td>Sjögren’s Syndrome</td>
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<td>+</td>
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<tr>
<td>Polymyositis</td>
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<td>+</td>
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<tr>
<td>Hepatitis, Chronic Active</td>
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<td>+</td>
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<td></td>
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<tr>
<td>Connective Tissue Diseases</td>
<td></td>
<td>+</td>
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<td>+</td>
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<tr>
<td>Diabetes, Insulin Dependent</td>
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<td>+</td>
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<tr>
<td>Pernicious Anemia</td>
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<td>+</td>
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<tr>
<td>Biliary Cirrhosis, Primary</td>
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<td>+</td>
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<tr>
<td>Thyroiditis</td>
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<tr>
<td>Addison’s Syndrome</td>
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<tr>
<td>Vittlago</td>
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<tr>
<td>Enteropathy, Antigens\textsuperscript{2}</td>
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<tr>
<td>Hyperthyroidism (Graves)</td>
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<td>+</td>
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<tr>
<td>AIDS/ARC</td>
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<td>+</td>
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<tr>
<td>Myasthenia Gravis</td>
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<td>+</td>
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<tr>
<td>Hemolytic Anemia</td>
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<td></td>
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<tr>
<td>Neutropenia</td>
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<tr>
<td>Thrombocytopenia (ITP)</td>
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<tr>
<td>Rheumatoid Arthritis</td>
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<tr>
<td>Multiple Sclerosis</td>
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<tr>
<td>Pemphigus vulgaris</td>
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<tr>
<td>Infertility (Autoimmune)</td>
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<tr>
<td>Glomerulonephritis</td>
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<tr>
<td>Discoid Lupus</td>
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<tr>
<td>Dense Deposit Disease</td>
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<tr>
<td>Adult Diabetes</td>
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<td>+</td>
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<tr>
<td>Sjögren’s Syndrome</td>
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<td>+</td>
<td>+</td>
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<td>+</td>
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<td></td>
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<tr>
<td>Pneumonitis/Bronchitis (allergic)</td>
<td></td>
<td>+</td>
<td>+</td>
<td></td>
<td>+</td>
<td></td>
<td></td>
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<tr>
<td>Asthma</td>
<td></td>
<td></td>
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</tbody>
</table>

\textsuperscript{a} Antigen site in cell or tissue
The Alkaline Way

to this approach, which involves indentifying each of the specific foreign invaders known generally as antigens that wear down the immune defense and repair system.22

Evaluating lymphocyte response – Through this novel ex vivo technology, it is possible to allow living white cells to react in the laboratory just as these lymphocytes do in the body.23 This ex vivo procedure measures lymphocyte reactivity to determine true delayed allergy/hypersensitivity based on the body’s long-lived memory-carrying white blood cells.

Comparative methodology – Limitations of other testing systems such as antibody measurement and particle size determination have been elsewhere reported.24 Results of these tests usually involve simple avoidance. Simple avoidance often provides a symptom remission; however, new sensitivities and symptoms emerge within months if the underlying causes of maligestion, and essential nutrient deficits and oxidative stress, are left unattended.25

Scope of evaluation – Functional lymphocyte response assays are unique in concurrently measuring all hypersensitivity pathways, which allows more true positive reactions to be identified.26,27 The acute and delayed allergy pathways are depicted in the “wheel of allergy” (Figure 2).28 This ELISA test is unique in being done on the surface of a living cell. LRA by ELISA/ACT tests are specific, sensitive, and predictive for all three types of delayed hypersensitivity pathways. They are, according to Gel and Coombs29:

- humoral or reactive antibody (IgA, IgG, and IgM) (type 2 reactions as described by Levin)30
- immune complex (IgM anti-IgG antigen complexes)
- cellular immunity from T cell direct immune response

In contrast, IgG assays measure only one antibody within one of three reactive classes.31 Limitation of the IgG assays includes being unable to distinguish helpful from harmful antibodies.32 An additional limitation is not measuring any other immune reaction pathway.32 Similarly, automated cytotoxic cell size particle counters measure an in vitro size change subject to many artifacts, false positives, and false negatives.

Accuracy of Functional Immunology Tests

The LRA by ELISA/ACT functional tests have an accuracy rate 97% higher than nonfunctional IgG testing and other automated cytotoxic, particle-size procedures.13,34

Figure 2: Wheel of Immune Response

Mechanisms

Functional lymphocyte response assays (LRA) are able to measure all delayed allergy responses.

2. Restoring Alkaline Balance

The Alkaline Diet

The Alkaline Way includes a health-promoting, nutrient- and fiber-rich diet that consists primarily of whole foods, along with targeted supplementation based on individual need.35 Priority is given to locally vine-ripened, organic, or biodynamic sources of foods. Mineral-rich water is the primary beverage.

A metabolically alkaline diet means that the food has a buffering effect on cellular chemistry.36 This can be different from the food’s primary chemistry.37 For example, citrus fruits are alkalinizing because the metabolism of citrate, malate, succinate, and fumarate generates more than twice as much bicarbonate buffer as is acid itself in the food.38 This means that citrus fruit and similar foods are acid in the body (see Figure 1).

Reducing the risks associated with acidity – The goal of this approach is to reverse intracellular acidosis, which impairs electron transport, reduces energy production, and impedes detoxification. Immune responses directly and indirectly generate substantial amounts of acidic products.39 In the vulnerable patient with impaired buffering capacity, it is especially important to avoid as many sources of antigen-induced or other causes of acid formation as possible.

Enhancing immune defenses – The substantial reduction in immunologic load plus alkalinizing foods can improve immune defense performance.41 This means reduced or eliminated host hospitality to chronic infection of any kind. This also means enhanced repair, reduced inflammation, and better antitumor surveillance. Substitution for reactive items is coupled with health-promoting diet substitutions, targeted supplementation.

Alkaline Nutrients

When dietary consumption patterns provide insufficient minerals to buffer metabolic acids, cell alkaline reserves can be depleted and the intracellular environment become acidic.42 Buffering mineral deficits result in intracellular metabolic acidosis linked to reduced energy production and impaired ability to safely remove toxins, especially relevant to the patient with chronic fatigue.43

Buffering minerals and fats – Key supplements for those people with net acid excess include sufficient buffering minerals to neutralize excess metabolic cell acids. Short- and medium-chain fatty acids with fewer than 16 carbons are also alkalinizing because acetate molecules can be added to them, thus reducing acetic acid (acetate). First morning urine pH is the predictive clinical tool to assess
risk of net acid excess, also known as metabolic acidosis.

Antioxidant supplementation – These supplements are provided to protect from oxidative damage, restore cell energy production, rehabilitate mitochondrial, and reset homeostatic mechanisms. Another goal of replenition is to reverse cumulative antioxidant deficits, often observed clinically as inflammation.

B-complex nutrients to support methylation – Impaired methylation is also commonly reflected in elevations in homocysteine above the healthy value of <6 µmol/L. Problems with these common states in physiologic impaired methylation. This reframes these common states in physiologic rather than pathologic terms, and offers integrative approaches to care as evidence-based options to be included as first line comprehensive care. This is particularly valuable for the chronic illnesses such as fibromyalgia that have become endemic in our time.

Self-Testing for Alkaline Status
This test, a pH assessment of the first morning urine, provides a surprisingly good measure of metabolic acidosis risk. The urine pH is a good indicator of the body’s mineral reserve and its acid/alkaline state. The body routinely uses overnight rest time to excrete excess acids. This capacity varies based on toxin load and individual ability to make energy, to inactivate toxins, and to excrete those toxins.

Using specialized pH Hydron test strips (Figure 3) can effectively give one a reliable assessment of the body’s acid or alkaline balance. A value of 7.0 indicates the neutral state, neither acid nor alkaline. Ideally, the first morning urine pH should be in a pH range of 6.5 to 7.5. A neutral or slightly acidic pH indicates that the overall cellular pH is appropriately alkaline and that the small amounts of acids built up from normal metabolism have been easily concentrated for excretion. Cell cytoplasm, or “cell juice,” functions best in a narrow, slightly alkaline range.

<table>
<thead>
<tr>
<th>Most Alkaline</th>
<th>More Alkaline</th>
<th>Low Alkaline</th>
<th>Lowest Alkaline</th>
<th>Food Category</th>
<th>Lowest Acid</th>
<th>Low Acid</th>
<th>More Acid</th>
<th>Most Acid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baking Soda</td>
<td>Spices/Cinnamon</td>
<td>Licorice</td>
<td>Black Cohosh</td>
<td>Agave</td>
<td>Sesame Seed</td>
<td>Dry Yeast</td>
<td>Black Tea</td>
<td>Black Tea</td>
</tr>
<tr>
<td>Sea Salt</td>
<td>Kambucha</td>
<td>Molasses</td>
<td>Soy Sauce</td>
<td>Rice Syrup</td>
<td>Apple Cider Vinegar</td>
<td>Sea Vegetables (other)</td>
<td>Nori/Kombu/Wakame/Hijiki</td>
<td>Licorice</td>
</tr>
<tr>
<td>Mineral Water</td>
<td>Green or Mu Tea</td>
<td>Rice Syrup</td>
<td>Apple Cider Vinegar</td>
<td>Sea Vegetables (other)</td>
<td>Sea Vegetables (other)</td>
<td>Sea Vegetables (other)</td>
<td>Sea Vegetables (other)</td>
<td>Sea Vegetables (other)</td>
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<tr>
<td>Umeboshi plum</td>
<td>Sake</td>
<td>Kombu Tea</td>
<td>Kombu Tea</td>
<td>Rice Syrup</td>
<td>Sea Vegetables (other)</td>
<td>Sea Vegetables (other)</td>
<td>Sea Vegetables (other)</td>
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<tr>
<td>Quail Egg</td>
<td>Duck Egg</td>
<td>Egg</td>
<td>Chicken Egg</td>
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<td>Chicken Egg</td>
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<tr>
<td>Pumpkin Seed</td>
<td>Poppy Seed</td>
<td>Cashew</td>
<td>Chestnut</td>
<td>Peppercorn</td>
<td>Primrose Oil</td>
<td>Sesame Seed</td>
<td>Cod Liver Oil</td>
<td>Almond</td>
</tr>
<tr>
<td>Lentil Broccoli</td>
<td>Kohlrabi</td>
<td>Parsnip/Taro</td>
<td>Garlic</td>
<td>Asparagus</td>
<td>Potato/Ball Pepper</td>
<td>Mushroom/Fungi</td>
<td>Cauliflower</td>
<td>Cabbage</td>
</tr>
<tr>
<td>Broccoli</td>
<td>Kohlrabi</td>
<td>Parsnip/Taro</td>
<td>Garlic</td>
<td>Asparagus</td>
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<td>Cauliflower</td>
<td>Cabbage</td>
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<tr>
<td>Lime Neckerin</td>
<td>Grapefruit</td>
<td>Cantaloupe</td>
<td>Honeydew</td>
<td>Citrus</td>
<td>Lemon</td>
<td>Pear</td>
<td>Apple</td>
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<tr>
<td>Raspberry</td>
<td>Watermelon</td>
<td>Tangerine</td>
<td>Pineapple</td>
<td>Balsamic Vinegar</td>
<td>Preservative</td>
<td>Spice</td>
<td>Sesame Seed</td>
<td>Sesame Seed</td>
</tr>
<tr>
<td>The Alkaline Way</td>
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</table>

3. Self-Care

Physical Fitness and Immune Competence

Physical motion is necessary for physical health. The basic truth of physical activity is that we retain and restore what we use and lose what we do not use. This means that learning to move fluidly, to stretch easily and smoothly, to learn the links between breath and movement, and to move rather than be static are essential to physical well-being, and immune defense and repair competence.54

Exercise should be a pleasure, with a goal of adequate activity that is achievable rather than excessive activity that becomes a burden. When immune defense and repair systems are operating well, repair is efficient, effective, and prompt. This means feeling better rather than having to recover after being physically active.55

Mindfulness Practice and Immunity

In this program, a comprehensive, patient-centered, motivational approach is offered to promote long-term, sustainable practices that restore health and resilience.57,58 The mind and body are always connected and interactive. This means that every physical act has a mental component and vice versa. Only in the mechanistic, reductionist view of the world are mind and body disconnected.

The Alkaline Way recognizes the intimate link between mind and body. This means that doing what we know and knowing why we do what we do are both important. This also means that if our thoughts or attitudes are unhealthy, they can be relearned in ways that promote rather than impair health. Distress is more about internal perception than external stress. Being at peace rather than anxious can be learned observationally through well-validated practices.56 Learning optimism is both possible and effective.57

Conclusions

One of the paradoxes of our time is that younger people are more and more often showing signs and symptoms of ill health that in previous decades were only observed in older people. These changes are occurring too quickly to be due to genetics. They are due to the losses in self-regulation/homeostasis and effective self-repair.

The immune system is not only our defensive system, it is also responsible for repair and systemic communication system.58,59 Restoration of immune competence depends on identification of elements in both biochemistry and lifestyle that need strengthening and substitution for reactive elements until tolerance is restored.60 The Alkaline Way programs restore tolerance, homeostasis, energetic balance, and resilience.
Acknowledgements

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Notes
