

# Immunology: The Bridge Between Two Worlds

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Each breath that we take, morsel of food that we swallow, or splinter that pierces our skin impels the immune system into action to protect us from real or perceived microbial threats to our health. It is a dynamic system that can change its structure and function in response to shifting internal and external circumstances; all things change in a dynamic environment. Short of cockeyed genetics or major trauma, your resistance to change your diet, bad habits, or psychological perspective is what creates your limitations and penchant for illness. Health is not a matter of happenstance but of movement and balance.

There are several key relationships of balance within the configuration of the immune system. One of the pivotal balances points is the relationship between the Th1 and Th2 cells.<sup>1,2</sup> T helper cells (Th cells) are a subgroup of white blood cells (lymphocytes), which play a critical important role in the immune system. These cells have no cytotoxic or phagocytic activity; they cannot kill infected host cells or pathogens. Rather, they activate and direct other immune cells; they are the brains of the immune system. Mature Th cells express the surface protein CD4 and are referred to as CD4+ T cells. CD4+ T cells are generally treated as having a predefined role as helper T cells within the immune system. The Th1 and Th2 subsets balance one another by inhibiting each other's activity. Each type of helper T cell produces different kinds of communication molecules called *cytokines*; the T cell types are defined by the cytokines they produce. These cytokines are termed *interferons* and *interleukins*.<sup>3</sup> The Th1 helper cells predominantly produce the cytokines interferon gamma (IFN-gamma) and IL-2, which are responsible primarily for the defense against viruses and intracellular microbes. Ultimately, the Th1 cells also activate the NK cells that protect us from cancer cells. Abnormally excessive Th1 responses have been found to be associated with autoimmune diseases, including rheumatoid arthritis, multiple sclerosis, inflammatory bowel disease, and type 1 diabetes.<sup>4</sup> When the balance is skewed and gets stuck in one direction, bad things happen.

Amongst other cytokines, Th2 cells produce interleukins 4, 5, and 13. These are important for stimulating the

production of antibodies (immune proteins that identify specific foreign substances for destruction) and often have multiple functions. Abnormally excessive Th2-type immune responses have been implicated in the development of chronic allergic inflammation, atopic dermatitis, and asthma. Excessive levels of inflammation from Th2 dominance increase the risk of cancer.<sup>5</sup>

What we think, how we live, what we do, and how we eat all affect the immune system and specifically the delicate balance of the Th1 and Th2 cells. Research on the impact of diet on immune function is ongoing, complex, and subject to revision in future articles. The activation and response of the immune system is not a linear affair. Few cells but many steps, cytokine pathways, and feedback loops are required; and, as with everything else, timing is everything.<sup>6</sup> As a useful simplification, let us first look at various diseases and illnesses and the predominant helper Th1/Th2 cells involved, remembering that they have several brothers and sisters that also participate in the response such as the dendritic cells, Th17, Th22, and T<sub>reg</sub> cells, to name but a few.

	Th1	Th2
Colds and influenzas are fought by <sup>7</sup>		x
Allergies are caused by overactive <sup>8</sup>		x
Atopic dermatitis is caused by <sup>9</sup>		x
Eczema is caused by overactive <sup>10</sup>		x
Autism is related to overactivity of <sup>11</sup>		x
Asthma is caused by overactive <sup>12</sup>		x
Food allergies are related to overactive <sup>13</sup>		x
Fibromyalgia is related to overactivity <sup>14</sup>		x
CFS parallels an overactivity of <sup>15</sup>		x
CFS can be overcome with activation of <sup>16</sup>	x	
Diabetes is related to an overactivity of <sup>17</sup>	x	
Osteoarthritis is perpetuated by <sup>18</sup>	x	
Chronic irritable bowel syndrome is related to overactive <sup>19</sup>	x	
Arteriosclerotic heart disease is associated with <sup>20</sup>	x	
Psoriasis is associated with overactivity <sup>21</sup>	x	
Babesiosis is fought by <sup>22</sup>	x	
Spontaneous abortions may be caused by an overactivity of <sup>23</sup>	x	
Cancer is fought by <sup>24</sup>	x	
Autoimmune diseases are caused by overactive <sup>25</sup>	x	







Owing to the complexity of the checks and balances within the immune system, determining the balance of the Th1/Th2 cells isn't just based on symptoms but rather on the results of the appropriate blood tests. Correcting these imbalances is not merely a matter of taking a pill and going back to business as usual. Healing is a process. Supplements as well as pharmaceuticals, meditation, exercise, and sleep all play a role. Integrating a comprehensive and effective treatment strategy for any severe or chronic illness is a matter of skill, experience, and finesse. Many supplements can play a useful part, but rarely a definitive role, when they act as immune response modifiers to help nurture the healing path. Immune response modifiers are characterized as having a directional effect, which is often dose dependent and biphasic, on the immune system without the benefit of responding differentially to feedback loops. Some of the agents that act on the Th1/Th2 balance are:

	Th1	Th2
Melatonin promotes <sup>26</sup>	x	
Refined sugar suppresses <sup>27</sup>	x	
Zinc deficiency increases <sup>28</sup>	x	
Quercetin promotes <sup>29</sup>	x	
<i>Lactobacillus</i> supports <sup>30</sup>	x	
EPA/DHA fish oil low dose supports <sup>31</sup>	x	
Vitamin E low dose supports <sup>32</sup>	x	
Arabinogalactan stimulates <sup>33</sup>	x	
Vitamin C promotes <sup>34</sup>	x	
Cipro and some other antibiotics suppress <sup>35</sup>	x	
Thyroid hormones support <sup>36,37</sup>	x	
Garlic stimulates <sup>38</sup>	x	
Moderate exercise increases <sup>39</sup>	x	
Glutathione stimulates <sup>40</sup>	x	
Glucans from therapeutic yeasts and fungi stimulate <sup>41</sup>	x	
Vitamin D skews the Th1/Th2 balance toward <sup>42</sup>		x
Magnesium deficiency increases <sup>43</sup>		x
Vitamin E high dose supports <sup>44</sup>		x
Vitamin A increases <sup>45</sup>		x
EPA/DHA fish oil high dose increases <sup>46</sup>		x
Green tea EGCG supports <sup>47</sup>		x
Glucosamine supports <sup>48</sup>		x
Excessive exercise is a stressor and increases <sup>49</sup>		x
Overcooked/processed omega-6 vegetable oils support <sup>50</sup>		x
Stress increases cortisol release and stimulates <sup>51</sup>		x
Antigen immunotherapy suppresses <sup>52</sup>		x
Mercury and lead promote <sup>53,54</sup>		x
Alcohol stimulates <sup>55</sup>		x
Cigarette tars and nicotine stimulate <sup>56</sup>		x

To help ensure the effect that we want from the immune response modifiers, we also use an immunomodulator. Immunomodulators are substances that don't have a directional effect on the immune response but rather help the immune system to reestablish the cytokine communication pathways necessary to restore immune competence. They are sensitive and differentially

responsive to feedback loops and receptor site stimulation. To date there is only one immunomodulator supplement that has been demonstrated to have these effects both clinically and in the test tube, and that is Ai/E<sup>10</sup>.<sup>57,58</sup> We find that the addition of this supplement facilitates, catalyzes, or, in short, make everything else work better and faster to restore balance.

Balance is beautiful; it gives us health and a life worth living.

## Notes

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## Incontinent after Brain Trauma – 30 Years Later A Mother's Letter

Dear Dr. Wishnow:

*My son, Ron, has been Incontinent for the last 30 years after a severe auto accident when he was 18. His brain was so traumatized that he was in a coma for about 4.5 months. His doctor lost hope and said he would not make it, or became bed ridden in a persistent vegetative state.*

*My husband and I refused to accept that 'reality'. We brought Ron back, cared, and prayed for him at our home. We tried everything to help him recover. Ron was in a wheelchair for 6 years, gradually progressed to using a walker, and then finally was able to walk. Now Ron is mobile, loving, upbeat, and has a great sense of humor. But Ron still has problems: he has no short term memory, and he is incontinent at night.*

*When I saw your **BetterMAN** ad for men's bladder control, I thought this remedy sounded very interesting for Ron to try. If nothing happened after 6-12 months, we could always move on to try something else. So I started Ron on BetterMAN at two capsules daily on 12/20/2011.*

*To our big surprise, we started to see improvements almost in two weeks. We were thrilled to death! Enclosed is the copy of the January calendar we use to record Ron's condition and communicate among several shifts of caretakers. As you can see, in January, Ron was DRY 21 nights! Before he started BetterMAN, he was dry only about 1-2 nights in one month.*

*Wearing Pull-Ups is a humiliating experience for adults. I said to Ron 'If you can make one month dry, I will let you wear whatever you like when you go to sleep.' Ron is very proud of his progress.*

*I also noticed that last Sunday Ron sat through a two-hour church service without using the restroom.*

(Peipei Wishnow, PhD, is the president of Interceuticals)

We are very thankful!  
Mrs. Kate, B. (2.5.2012)

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