

# The Skin in Health and Disease

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## Introduction

It is as if I have in front of me three dolls: one made of steel, one made of celluloid and another of glass. I choose to hit these three dolls with a hammer using equal strength. Why is it that the steel doll will emit a beautiful musical sound? Why is it the celluloid doll will simply scar and the glass doll will shatter?

This is a metaphor for resistance and susceptibility in health and disease. The inescapable fact is that some people seem to be made of steel. They never get sick. Other folks appear to be like glass, they are forever having problems (e.g. they have more broken bones, catch colds frequently, have more pimples and blemishes, etc). Of the terms for these kinds of people, some are more descriptive than others. Some are very discreet and sophisticated, such as odds ratios and/or risk factors. Others are very simple like pluses and minuses. Among the many labels is the recognition that two forces are operating in concert. One may be viewed as the resistance factor (such as taking vitamins, hormones, eating the right food, drinking good water and breathing good air) and may be defined by those agents which invite health. In contrast, there are those elements which may be viewed collectively as the susceptibility factor which promote sickness (i.e. lead, alcohol, pesticides, tobacco, fast foods, sugar). In other words, one can establish two forces, positive and negative, in the genesis of health and sickness.

It may come as a surprise to many that there are very few healthy people; most of us have some minor illness which may or may eventually lead to serious problems. This has largely been the concern of Nedra Belloc of the Human Population Laboratories in California. According to her criteria, the one inescapable point is fatigability.

This subject will be discussed in great detail in a future article. It is noteworthy that using energy as a defining point only about 5% or 6% of the public may be viewed as healthy. In other words, good digestion, respiration, circulation, excretion and reproduction, all of these put together, make for optimal energy.

## The Ecology of Disease

We submit the following three points. First, health may be defined as a state. The biochemist would undoubtedly view it as a biochemical condition. A clergyman would take a spiritual or moral view. Each instance reveals that health is a state adjectivally qualified by the definer and his/her perspective. Secondly, and additionally, health is a state made possible with a minimum of effort. In other words, the ultimate state of health eventuates from a relatively painless and otherwise smooth running digestion, respiration, circulation, excretion and reproduction. So, health may be defined as a state made possible with a minimum of effort. Finally, and most importantly, the end result is a maximum of pleasure.

The problem of health and disease is ecology. We have a set of external and internal factors. These interplay to produce ecology. Beginning with the earliest medical writings, the thought has pervaded that in some way health and harmony are related. The ancient Greek physician, Hippocrates, dealt in detail with balance in the genesis of health and the role of imbalance in disease. With regard to homeostasis, we would be remiss without mentioning the names of two prominent investigators, Claude Bernard and Walter Cannon. While it was Bernard who may well have generated the concept, it was Cannon who coined the term "homeostasis" to suggest a steady state.

It is well to note that life and death are a function of homeostasis (also previously referred to as host resistance and susceptibil-

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ity). The cells singly, and collectively, as a total organism survive when host resistance can cope successfully with the innumerable and diverse environmental threats. Many of these external challenges, such as extremes of temperature, have always prevailed. Other threats like pollution are relatively new.

When the homeostatic machinery collapses, host susceptibility replaces host resistance. The same environmental challenges now overwhelm the system, and disease and then death ensue. While much about homeostasis is still unknown, it is clear that metabolism echoes the homeostatic state.

The history of homeostasis includes long and complicated analyses of temperature, weight, blood pressure, respiration, fluid balance and hormones. Obviously, all of the mechanisms, the uncounted number of enzymes and almost limitless physiochemical reactions, are not known and likely never will be. Hence, as one might expect, research and publication on the subject will continue.

Much of the activity is academic and complex; fortunately, some of it is fairly simple and practical. As a demonstration of how current and relevant the interest is in this continuing open-ended hypothesis and how simple the analysis can be, we call your attention to the little-known work of one current investigator, Arthur F. Coca, M.D. He was Medical Director of Lederle Laboratories for approximately 17 years.

His importance to the homeostatic story is that he observed a simple common denominator of steady state in a series of seemingly diverse medical syndromes. Briefly, he noted many patients reporting unrelated symptoms and signs associated with an increase in pulse rate. Specifically, his patients exhibited numerous clinical findings and in every case all of the existing symptomatology departed together. In most instances, the symptoms could be initiated by merely introducing or restoring a particular offending agent (often a food). Without exception,

the symptoms were accompanied by an increase in heart rate. This point is additionally noteworthy because it is stated in most medical texts that digestion is accompanied by an increase in heart rate. This is not true. What should be stated is that pathologic digestion is indeed paralleled by an acceleration of the pulse. Under physiologic conditions, this does not occur. In other words, eating right does not accelerate the pulse. The fact that with most eating there is an increase simply suggests that most eating may be pathologic.

What Coca as early as 1956 pointed out is that the pulse-rate can be used as a simple and inexpensive measure of homeostasis. In the healthy state, the pulse usually remains within relatively narrow limits. Under disease conditions, the pulse increases.

Most clinicians and even the man-on-the-street would concede that causative factors may yield widely different clinical results. The invasion by a respiratory germ may in one instance result in pneumonia. In a second case, there may be only the sniffles; while in a third instance, the patient may remain unscathed.

### The Skin in Health and Disease

It is noteworthy that the number of persons with one or more skin conditions comes to a staggering 25,000,000 in the civilian noninstitutionalized population of the United States according to the best estimates we have from the United States Department of Health and Human Services. Since this figure has been relatively constant during the recent years, it would suggest that the diverse conventional therapies have not served as the solution. It is quite probable that factors relating to the cause, cure, and prevention of skin disorders have been overlooked or carelessly discarded or both.

### Method of Investigation

In an attempt to identify unrecognized variables in the genesis of skin disorders, dietary and medical histories of

1065 doctors and their spouses were analyzed on several visits including daily vitamin C consumption.

## Results

Figure 1 (p.4) demonstrates that the intake of ascorbic acid was found to be significantly related to the number of reported skin symptoms and signs. Specifically, the average daily vitamin C intake was 335 mg per day in the 799 subjects with no reported skin symptoms and signs. In contrast, the mean daily vitamin C intake was 308 mg in the 266 individuals with one or more reported skin symptoms and signs. This difference, as shown in Figure 1, is highly significant ( $t=2.0797$ ;  $p<0.050$ ). However, it should be quickly emphasized that the mere fact that this relationship prevails does not necessarily prove a cause-and-effect pattern.

Accordingly, the average number of skin findings were analyzed at the beginning and at the end of a one-year period in two groups differing in their change in daily vitamin C consumption (Figure 2, p. 5). Specifically, one group consisted of 281 subjects who increased their daily vitamin C intake, on the average, from 240 to 428 mg per day. In this group, the mean number of skin findings decreased approximately 50%. In contrast, in 85 subjects who did not increase and, in fact, slightly decreased their daily vitamin C intake from 416 to 327 mg per day, there was no statistically significant change in the mean number of skin findings.

## Summary and Conclusions

The 1800s were good times in terms of the growth of modern medicine. Some of the principles fundamental to the genesis of 20th century medicine came on the scene. Louis Pasteur focused our attention on germs and their relationship to health and disease. We emphasized that microorganisms play havoc only when they light on poor soil. Unfortunately, some of us have twisted this about so that it has come to sound like germs really

and singly are the culprits in ill health.

About this time, as we have seen, Claude Bernard and his colleagues, and later Walter B. Cannon, identified the fact that we are surrounded by a world filled with many and different environmental challenges. How we fare is in part a function of the number and severity of this bombardment in the light of an internal world, the milieu interieur. Much time and effort was spent in those early days describing the mechanisms underlying the world within. Most importantly, it became obvious that the most critical element of this inner environment was its steadiness.

We can call it soil, internal world, host resistance/susceptibility, tissue tolerance, immune systems. Call it what you will, it permits us for the first time to explain why seemingly similar people with similar problems have different clinical pictures and respond so differently to seemingly similar treatment.

This report proposes a significant positive association of vitamin C and skin disorders. What this suggests actually is that there is some evidence to indicate that those subjects who increased their daily ascorbic acid intake significantly reduced their number of skin findings. Conversely, those persons who did not increase their daily vitamin C consumption showed no significant change in the average number of integumentary symptoms and signs. We should make the point now that here is an example of vitamin C being used as a resistance agent for disease. The relationship is consistent with the fact that we have found similar results with the respiratory and cardiovascular systems to be discussed in future reports.

## References

1. *Vitamin C and the Skin*. Natural Medicine Online 2: 11, December 1999. <http://www.nat-med.com>

Figure 1. Mean daily vitamin C intake and skin symptoms

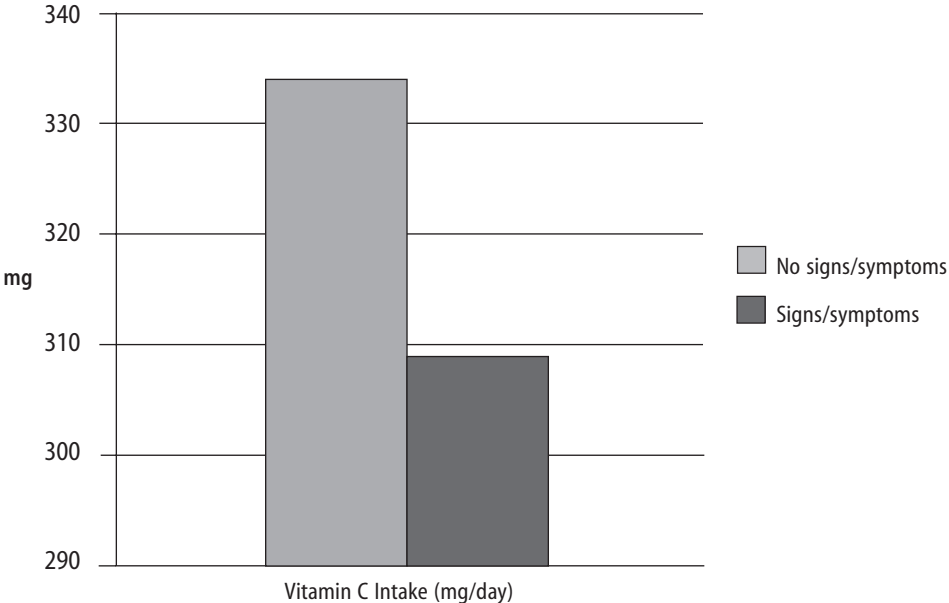


Figure 2. Relationship of changes in skin findings in terms of daily vitamin C intake.

