

REDUCTION OF FREE RADICALS FOR HEALTH ENHANCEMENT

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ABSTRACT

Daily intake of fruits and vegetables by Americans is lower than recommended for optimal health. To date, fruit and vegetable intake has been the only dietary method for reducing free radicals. Free radical reduction is a key to improvement in health and longevity. In an Institutional Review Board (IRB) approved study, free radical production was decreased in 80% of 36 test subjects who ingested 2 oz daily of fruit concentrate, Mistica®.

KEYWORDS: Free Radical Reduction, Fruits, Vegetables

INTRODUCTION

Oxidative stress has been hypothesized to be a major contributor to Alzheimer's disease, myocardial infarction, atherosclerosis, Parkinson's Disease, autoimmune diseases, radiation injury, emphysema, sunburn, kidney failure, schizophrenia, leukemia, cancer, osteoporosis, macular degeneration, cataracts, hearing loss, and, indeed, all disease, including the many chronic pain problems. Oxidative stress creates free radicals, essentially hydroxyl radicals, which damage micro molecules in lipids, proteins, and carbohydrates.¹ Indeed this subtle and often ignored chemical effect initiates a cascade chain reaction which disrupts nucleotides and damages DNA.^{2,3} A major result of free radical damage is lipid peroxidation, an essential contributor to atherosclerosis.² Malondialdehyde (MDA) levels in blood and urine have been widely used as markers of peroxidation, and urine measurement of malondialdehyde is by far the easiest and least expensive clinical tool for measurement of free radical production.⁴

Free radical scavengers, such as vitamin C, vitamin E, beta carotene and Co-Q 10, capture the radicals and blood levels of antioxidants and are often cited as useful in determining the risk of free radical damage.^{5,6} Interestingly, excessively high levels of antioxidants may be counterproductive and there is little evidence that antioxidant supplements actually reduce total production of free radicals. In fact, only large intakes of fruits and vegetables, significant reduction of calories, and electrical stimulation of a specific acupunc-

ture circuit have been proven to reduce free radicals and to begin to reverse DNA damage.^{7,8} Unfortunately, Americans have been resistant to all three of these approaches.⁹ Average American intake of fruits and vegetable is an appalling 3.4 servings per day. Caloric intake is excessive, as reflected in the statistic that two-thirds of Americans are overweight or obese. And most people will not take the 21 minutes required to stimulate the acupuncture points which have been proven to decrease free radicals. Daily stimulation of the 13 acupuncture points called the Ring of Crystal routinely reduces free radicals 85%.⁸

There are numerous concentrates of fruits and vegetables available over the Internet and in health food stores, but we have found no publications demonstrating that these products reduce free radicals.

RESULTS

29 of 36 (80%) who completed the study had a reduction in free radical production and there was an average reduction of 56% in the quantitative value of free radicals in the urine in those who improved. Even including the 7 who failed to reduce free radicals, there was a 43% reduction overall in the participants. All subjects had elevated levels of free radicals initially. The ideal level is less than one. Levels ranged from 2+ to 4+ initially. We have done this test in hundreds of individuals and in most individuals free radical excretion varies over time by not more than 1+ on the 0 to 5+ scale.

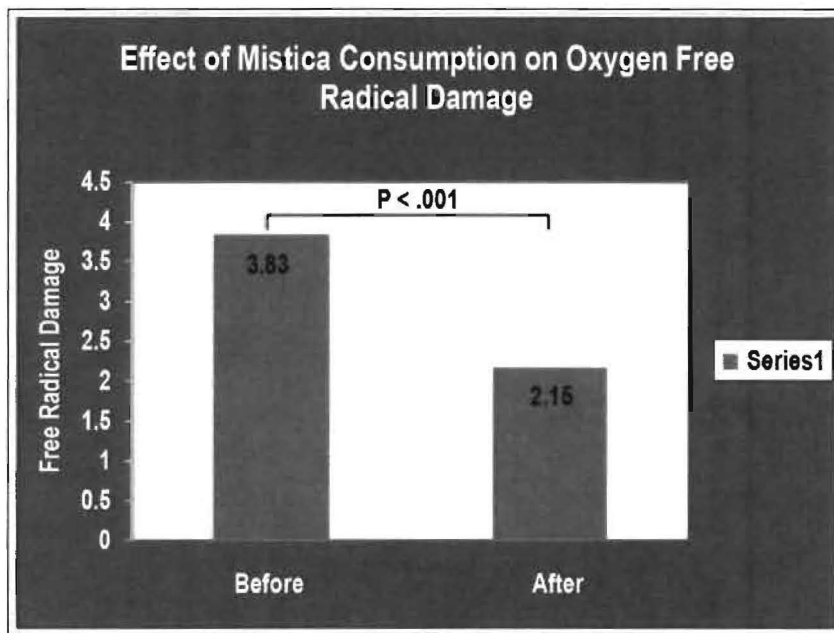


Figure 1. Effect of Mistica Consumption on Oxygen Free-Radical Damage.

No comparison was made with a placebo drink.

The paired samples t-test reveals a significant reduction from a mean of 3.83 on pre-test urinary free radicals to a mean of 2.15 on the post-test ($t[35]=7.42$, $p<.001$).

The subjects were mostly female but weight-wise represent the American average; two-thirds being overweight. Twenty-five of 36 individuals had reduction in free radical output by 1.5 points or more and overall there was a reduction of 43% in free radicals, significant at the .001 level.

DISCUSSION

The malondialdehyde urine test has been studied extensively.^{10,11,12} This is the first known study to demonstrate reduction in free radicals with the addition of a food concentrate. Since most people do not consume adequate fruits and vegetables, a food concentrate offers an attractive and feasible method for enhancing health. Mistica contains concentrates of 14 fruits including those with known high concentrations of ORAC units, anthocyanins and phenolics. It may well be that the combination of the various antioxidants provides a synergistic effect not seen when supplements of a single antioxidant, such as vitamin C, is given. As can be seen in the raw data chart, the reduction in free radicals is very individualistic. Some with higher

Raw Data

Subject #	Before	After	% Reduction	Reduction Difference	Subject #	Before	After	% Reduction	Reduction Difference
1	4.5	2.5	0.44	-2	19	3.5	4	(0.14)	0.5
2	4	2.5	0.38	-1.5	20	5	1	0.80	-4
3	3.5	3	0.14	-0.5	21	3	1	0.67	-2
4	5	1.5	0.70	-3.5	22	3.5	0	1.00	-3.5
5	4	4	-	0	23	5	2	0.60	-3
6	3	1.5	0.50	-1.5	24	4	1.5	0.63	-2.5
7	5	3.5	0.30	-1.5	25	3	1	0.67	-2
8	5	3.5	0.30	-1.5	26	5	2	0.60	-3
9	4	4	-	0	27	5	2	0.60	-3
10	4.5	4	0.11	-0.5	28	3.5	2	0.43	-1.5
11	2.5	0	1.00	-2.5	29	3.5	4	(0.14)	0.5
12	4.5	3	0.33	-1.5	30	4	2	0.50	-2
13	3.5	4	(0.14)	0.5	31	4	0	1.00	-4
14	4.5	2	0.56	-2.5	32	3	1	0.67	-2
15	2.5	3.5	(0.40)	1	33	4	1.5	0.63	-2.5
16	4	3	0.25	-1	34	2	0.5	0.75	-1.5
17	1.5	1.5	-	0	35	4	0.5	0.88	-3.5
18	4	3.5	0.13	-0.5	36	3.5	1	0.71	-2.5

Figure 2. Raw data for free-radical measurements. Malondialdehyde scale ranges from 0 to 5.

levels and some with lower levels had greater reductions in free radicals.

I have had no financial involvement or support from the manufacturer. However, after completing this study, I have added it to products available through my mail order business.

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