BioAstin, a natural astaxanthin from micro-algae, helps relieve pain and improves performance in patients with carpal tunnel syndrome (CTS)

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Study Report – May 4, 2002

Introduction

Carpal tunnel syndrome is the most common entrapment neuropathy. It involves symptoms of numbness, paresthesias and pain in the radial three and a half digits. The hallmark of the diagnosis remains the history and a careful physical examination. Treatment by wrist splint, immobilization and steroid injection into the carpal canal may provide relief and elimination of symptoms. Patients without any resolution of symptoms are generally considered candidates for surgical decompression of the carpal canal. Benefits from non-surgical treatment, seems to be limited, and not all patients respond to surgery. While there are several opinions regarding effective treatment there is very little scientific support for the range of options currently used in practice. Do to complications and postoperative complaints further investigations into alternative techniques seem necessary.

Preliminary anecdotal evidence showed that regular consumption of BioAstin, containing astaxanthin, may help symptoms of carpal tunnel syndrome.

Description of the study

We performed a pilot study to evaluate the efficacy of this product in the treatment of carpal tunnel syndrome. Each gelcap study product contained 460 milligrams high oleic safflower oil, 40 milligrams Haematococcus extract, 4 milligrams astaxanthin, 40 micrograms leutein, 65 International Units vitamin A (as beta-carotene), 50 International Units vitamin E (as d-alpha-tocopherol), gelatin and rosemary oil. The placebo contained food grade safflower oil.
Subjects consumed three study product gelcaps daily, one with each meal, for eight weeks. Subjects were asked not to change any other medication that they were taking, either prescription or OTC. The subjects completed questionnaires (Appendix One) at the beginning of the study, at mid study (4 weeks), and after 8 weeks.

The study was a single-center, double-blind, placebo-controlled, parallel design study of eight weeks' duration with a total of 20 subjects. A group of 13 were randomized to BioAstin and a group of 7 randomized to the placebo.

Results
The daytime pain rate at the beginning, after 4 weeks and after 8 weeks was 1.69±0.99, 1.23±0.70, 1.00±0.88 for the treatment group and 1.67±0.47, 1.83±0.37, 1.50±0.50 for the control group. The duration of the daytime pain at the beginning, after 4 weeks and after 8 weeks was 2.15±1.23, 1.69±1.13, 1.38±1.44 for the treatment group and 2.17±1.07, 2.67±1.10, 2.17±1.34 for the control group. In their final report some subjects reported major changes now possible in their life style. One subjects unable to play golf for two or three days after a day of playing, was able to play again later on the same day (CP). Table 1 summarizes the results and Figure 1 and 2 visualize the decrease in pain.
TABLE 1

<table>
<thead>
<tr>
<th></th>
<th>DAYTIME PAIN RATE</th>
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<tbody>
<tr>
<td></td>
<td>before</td>
<td>4 weeks</td>
<td>8 weeks</td>
</tr>
<tr>
<td>treatment group</td>
<td>1.69±0.99</td>
<td>1.23±0.70</td>
<td>1.00±0.88</td>
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<tr>
<td>control group</td>
<td>1.67±0.47</td>
<td>1.83±0.37</td>
<td>1.50±0.50</td>
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<table>
<thead>
<tr>
<th></th>
<th>DURATION OF DAYTIME PAIN</th>
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<tbody>
<tr>
<td></td>
<td>before</td>
<td>4 weeks</td>
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<td>2.15±1.23</td>
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<td>1.38±1.44</td>
</tr>
<tr>
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<td>2.67±1.10</td>
<td>2.17±1.34</td>
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</tbody>
</table>

In this table, lower numbers mean positive results.

Conclusion

BioAstin or products containing astaxanthin may be an effective treatment for carpal tunnel syndrome allowing patients to suffer less daytime pain with a shorter duration of pain. The large standard deviations show that while there was a definite trend to lower pain and for many subjects outstanding results, because of the small number of subject the changes are not statistically significant. Further study with larger study groups is needed and this may result in statistical significance.
Figure 1 - Duration of daytime pain

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<table>
<thead>
<tr>
<th>CTS</th>
<th>Length of Day Time Pain Chart</th>
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<tbody>
<tr>
<td>not treated</td>
<td>2.9, 2.7, 2.5, 2.3, 2.1, 1.9, 1.7, 1.5, 1.3</td>
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<tr>
<td>treated</td>
<td>2.9, 2.7, 2.5, 2.3, 2.1, 1.9, 1.7, 1.5, 1.3</td>
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</tbody>
</table>
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day 0     4 weeks     8 weeks

The lower the value, the lower the pain
Figure 2 - Daytime pain

The lower the value, the lower the pain
Appendix One
Symptom Severity Scale (SSS) — Kona Algae & Carpal Tunnel Syndrome Study

The following questions refer to your symptoms for a typical 24-hour period over the past week. For questions 2-9, please circle one answer.

1. How severe is the hand or wrist pain that you have at night? Place a mark on the line below to indicate how severe your pain is:

   No pain at night

   _______

   very severe pain at night

   5. Do you have weakness in your hand or wrist?
   a. No weakness
   b. Mild weakness
   c. Moderate weakness
   d. Severe weakness
   e. Very severe weakness

   6. Do you have tingling sensations in your hand?
   a. No tingling
   b. Mild tingling
   c. Moderate tingling
   d. Severe tingling
   e. Very severe tingling

   7. How severe is the numbness (loss of sensation) or tingling at night?
   a. I have no numbness or tingling at night
   b. Mild
   c. Moderate
   d. Severe
   e. Very severe

   8. How often did numbness or tingling wake you up during a typical night during the past 2 weeks?
   a. Never
   b. Once
   c. Two or three times
   d. Four or five times
   e. More than five times

   9. Do you have difficulty with the grasping and use of small objects, such as keys or pens?
   a. No difficulty
   b. Mild difficulty
   c. Moderate difficulty
   d. Severe difficulty
   e. Very severe difficulty

10. Did you miss taking any gelcaps during this 4-week period? No _____  Yes _____  If yes, how many did you miss _______ and give reason _________