EFFECT OF A MIXTURE OF CALCIUM, VITAMIN D, INULIN AND SOY ISOFLAVONES ON CALCIUM ABSORPTION IN POST-MENOPAUSAL WOMEN: A RETROSPECTIVE ANALYSIS

M. Bevilacqua1, V. Righini1, D. Certani1, M. Alemanni2, G. Gandolini2

1 Endocrinology and Diabetes Unit, Department of Medicine, Luigi Sacco Hospital (Milan), 2 University of Milan, Milan, Italy; 3 Medical Affairs, Medical Department, Bayer S.p.A. – Pharmacuticals, Milan, Italy; 4 IRCCS ‘S. Maria Nascente’, Rheumatology and bone Metabolism Unit, Ren Gobbi Foundation ONLUS, Milan, Italy

INTRODUCTION

Recent findings strongly suggest that the concomitant supplementation of calcium and vitamin D is required for an effective prevention of bone fractures, whereas the sole supplementation of either seems to be ineffective [1-3]. However, there is a tendency in the elderly to progressively develop vitamin D resistance in the gut, thereby limiting its effectiveness in promoting an efficient calcium absorption [4,5]. Thus, there is the need to search additional ways to promote an effective calcium absorption and, consequently, bone health. By retrospectively analyzing a population of post-menopausal women, we observed that the addition of inulin and soy isoflavones to a relatively low amount of calcium and vitamin D was able to enhance calcium absorption.

AIM OF THE STUDY

In the light of the abovementioned observations, we wanted to test whether the addition of inulin and soy isoflavones to a mixture of calcium and 25(OH) vitamin D was able also to influence bone metabolism in a population of otherwise healthy post-menopausal women.

RESULTS

Demographics

<table>
<thead>
<tr>
<th>Women</th>
<th>n = 28</th>
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<tbody>
<tr>
<td>Age (range)</td>
<td>67 (36 – 84)</td>
</tr>
<tr>
<td>Years at menopause (range)</td>
<td>51 (32 – 59)</td>
</tr>
<tr>
<td>Years in menopause (range)</td>
<td>18 (4 – 43)</td>
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</tbody>
</table>

The study population, although small, was quite heterogeneous, in terms of age and years since menopause onset, favoring the generalizability of the observed results.

Effects on Bone Metabolism

The significant increase of Insulin-like Growth Factor 1 (IGF1) levels (+160%) are suggestive of an improved bone anabolism. Soy isoflavones are known to promote the synthesis of IGF1 [6].

A trend towards a modest reduction of osteocalcin levels was observed, but it was not statistically significant, probably because of the small sample size.

Collagen-telopeptide (CTX) levels were significantly decreased (-17%), suggesting a decrease in bone resorption. A positive effect of soy isoflavones on bone resorption has already been extensively characterized [7].

CONCLUSIONS

The study mixture was able to promote intestinal calcium absorption, as shown by the marked increase in daily calcium and by the decrease in circulating parathormone levels. Since the amount of supplemented calcium was relatively low, the starting 25(OH) vitamin D levels were above the threshold for vitamin D sufficiency and they were unchanged by the treatment, it is likely that the addition of inulin and soy isoflavones was responsible for the improvement in calcium absorption observed.

The observed effects on bone metabolism can also be attributed to the action of soy isoflavones [6-7] and to inulin, which is able to promote their absorption [8]. For these reasons, the addition of inulin and soy isoflavones to the daily supplementation of calcium and 25(OH) vitamin D represents an interesting option for both the enhancement of calcium absorption and the promotion of bone health in post-menopausal women.

REFERENCES