

## Ostera™

All-natural Ostera fills the gap in postmenopausal bone support to help women stay vital and active.\*



“I used to think calcium supplements were enough to keep my patients healthy. Until I realized adequate mineral intake is just one aspect of bone health.”



# Filling the Gap in Postmenopausal Bone Support\*

Bone physiology shifts with age and, as a result, postmenopausal bone health needs are different. Help ensure your patients' long-term vitality and activity with *all-natural* support for healthy bone remodeling.\*

## **Bone is in a Constant State of Remodeling**

Bone is living tissue that is continually remodeling, a process that primarily consists of resorption (degradation) and formation. Osteoclast cells remove old and damaged bone tissue. Then osteoblasts and osteocytes create a new bone matrix—the web-like, micro-architecture of bone—that incorporates minerals to give bone its density and hardness. If healthy remodeling changes with age, new bone growth may occur on a less dense matrix, negatively impacting bone quality and strength.

## **Menopause Disrupts the Bone Remodeling Process**

As a woman enters her fourth decade of life, the ability to maintain peak bone mass declines as resorption and remodeling gradually change. The steady decline of estrogen combined with a subtle increase in cytokines after menopause may contribute to an increase in bone resorption.<sup>1</sup>

## **Postmenopausal Women May Need More than Mineral Supplements\***

Research suggests that biomarkers of bone matrix quality and strength are not significantly influenced by mineral intake. *Bone matrix quality and strength* and *bone mineral density* are different. As a result, a significant gap in natural bone health support for your postmenopausal patients has existed—until now.\*

## **Ostera: All-Natural Support for Healthy Remodeling\***

Ostera fills the gap in postmenopausal bone support to help women stay vital and active. How? By demonstrating a positive influence on key biomarkers of bone remodeling. In a recent clinical study, Ostera (in conjunction with lifestyle intervention) was shown to positively influence biomarkers which a growing body of research suggests are useful for evaluating bone remodeling status in postmenopausal women.\*<sup>2-9</sup>

Developed through the ExpresSyn® Process, Ostera is the only formula that incorporates SKRM technology to promote healthy bone remodeling.\* This unparalleled formula includes:

- Berberine and SKRMs (as RIAA) that target metabolic signaling processes related to bone health.\*
- Vitamin K, a key vitamin in the metabolism of bone proteins crucial to bone integrity.\*
- Vitamin D, associated with healthy bone formation and bone mineralization.\*

## **Ostera™**

Promotes healthy bone remodeling to favor bone matrix quality and strength in postmenopausal women with low estrogen\*

- Positively influences osteocalcin, a key marker of bone remodeling rate\*
- Clinically shown to be more effective than diet and exercise alone\*

\* These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.

# Clinically Effective in Improving Markers of Bone R

A randomized, single blind, placebo-controlled trial of 76 postmenopausal women with low estrogen levels was conducted over 12 weeks at the Functional Medicine Research Center<sup>SM</sup>, the clinical research arm of Metagenics, Inc.<sup>10</sup>



## Ostera Program Group

Mediterranean-style, low-glycemic-load (LGL) diet and 150 minutes of aerobic exercise weekly plus one Ostera tablet twice daily.<sup>†</sup>



## Key Findings

### Remodeling Rate

⬇️ Target: Reduction of Markers

- Significant reduction in serum osteocalcin (OC). A growing body of scientific evidence has shown OC to be a better indicator of the rate of bone remodeling (turnover) in postmenopausal women.<sup>2,4-6,9</sup> A slower rate of bone remodeling is associated with a slower rate of bone resorption.\*
- Significant reduction in serum OC in the subset of women with higher baseline insulin growth factor-1 (IGF-1). Higher IGF-1 levels in combination with lower OC levels are associated with healthy bone mineral density (BMD) in older women.\*<sup>11</sup>
- Significant reduction in serum OC in the subset of women with high urinary N-telopeptide of type 1 procollagen (NTx) above 65 nM BCE/mM Cr. NTx is considered a marker for bone resorption.\*

### Bone Formation

⬆️ Target: Increase of Markers

- Significant increase in serum IGF-1. Decreases in IGF-1 are associated with aging, oxidative stress, cytokine increase (IL-6), estrogen decline, and decreased osteoblast proliferation.\*<sup>11-13</sup>
- Significant increase in vitamin D status. Vitamin D influences osteoblast recruitment for bone formation (as well as mineralization).\*



## Control Group

The same diet and exercise recommendations without Ostera supplementation.



## Key Findings

### Remodeling Rate

⬇️ Target: Increase of Markers

- Significant increase in serum OC. Higher OC levels are associated with accelerated bone turnover in postmenopausal women.<sup>2,4-6,9</sup>
- Significant increase in serum OC in those with relatively high baseline IGF-1.
- Significant increase in serum OC in those with high urinary NTx. This suggests an increased rate of bone turnover in those at risk.

### Bone Formation

⬆️ Target: Increase of Markers

- Modest increase in serum IGF-1 attributed to healthy lifestyle changes.
- Significant reduction in vitamin D status despite lifestyle intervention.

<sup>†</sup>After a 2-week run-in phase with placebo with diet and exercise.

# emodeling\*

## Conclusion

The Ostera Program has shown to be more effective than diet and exercise alone in positively influencing markers of bone remodeling in postmenopausal women with low estrogen levels.\*

Effect on Biomarkers of Bone Quality: Ostera Program vs. Diet & Exercise Alone						
	Marker	Target	Ostera Program Group Mediterranean-Style LGL Diet, Aerobic Exercise & Ostera		Control Group Mediterranean-Style LGL Diet & Aerobic Exercise	
			Change (Mean)	% change <sup>†</sup>	Change (Mean)	% change <sup>†</sup>
Remodeling Rate Markers	Osteocalcin (OC)	Decrease	-5.15 <sup>††</sup>	<b>-31.07%</b>	3.20 <sup>††</sup>	<b>16.40%</b>
	OC (High N-Telopeptide of Type 1 Procollagen, NTx) <sup>†††</sup>	Decrease	-5.07 <sup>††</sup>	<b>-31.69%</b>	4.30	<b>22.64%</b>
Formation Markers	Vitamin D	Increase	8.74 <sup>††</sup>	<b>16.21%</b>	-7.22 <sup>††</sup>	<b>-14.63%</b>
	Insulin-like Growth Factor (IGF-1)	Increase	21.02 <sup>††</sup>	<b>21.19%</b>	10.57 <sup>††</sup>	<b>13.10%</b>
	N-Terminal Propeptide of Type 1 Procollagen (P1NP)	Increase	3.81 <sup>†</sup>	<b>6.54%</b>	-5.46 <sup>†</sup>	<b>-11.98%</b>

<sup>†</sup> The percentage of change is reported by the median percentage of each group.  
<sup>††</sup> These results are statistically significant.  
<sup>†††</sup> In subjects with NTx over 65 at baseline (subjects suggested to have a higher resorption rate).  
<sup>†</sup> In subjects in the highest tertile of IGF-1 at baseline.

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**Scientifically Formulated through the ExpressSyn® Process**  
 Ostera is part of a select group of novel formulations that set a new standard of clinical certainty in natural products by demonstrating efficacy, bioavailability, and a high level of predicted safety.\*

The ExpressSyn Process is the most significant product development innovation in the history of nutraceuticals and combines cell proteomic research, safety evaluations, human ex vivo research, and human clinical research.

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# A Comprehensive Approach to Postmenopausal Bone Support\*

Recommend Ostera™ and Cal Apatite® Forte to help your patients stay active and vital.\*

## Support Bone Remodeling and Bone Mineralization\*

Ostera fills an important gap in postmenopausal bone health support by naturally promoting healthy bone remodeling. Comprehensive bone support also requires high quality minerals to support healthy bone mineralization—when minerals are added to the new bone matrix before it calcifies (hardens).\*

Adequate mineralization support (with a formula such as Cal Apatite® Forte) plays a key role in promoting long-term bone health, and is an ideal adjunct to Ostera for a comprehensive approach to postmenopausal bone health.\*

Bone Remodeling	Bone Mineralization
<p><b>Ostera™</b> Promotes Healthy Bone Remodeling in Postmenopausal Women*</p>	<p><b>Cal Apatite® Forte</b> Purity-Certified MCHC with Optimized Levels of Vitamin D</p>
<p><b>Patient benefits</b></p> <ul style="list-style-type: none"> <li>• Features selective kinase response modulators (SKRMs) in the form of reduced iso-alpha acids (RIAA) from hops, as well as the herb berberine, and vitamins D and K to nutritionally support healthy bone remodeling during the aging process*</li> <li>• All-natural formula without serious adverse effects</li> </ul> <p><b>One tablet supplies</b> Vitamin D (as cholecalciferol) 500 IU, Vitamin K (as phytonadione) 500 mcg, Berberine HCl (<i>Phellodendron amurense</i> bark extract) 90 mg, Reduced Iso-Alpha Acids complex (from a hops extract, <i>Humulus lupulus L.</i>) 370 mg.</p> <p><b>Other ingredients:</b> Microcrystalline cellulose, stearic acid, croscarmellose sodium, calcium silicate, silica, magnesium stearate, and coating (deionized water, microcrystalline cellulose, polyethylene glycol, and carrageenan).</p> <p><b>Recommendations:</b> One tablet twice daily.</p> <p><b>Form:</b> 60 Tablet Bottle</p> <p><b>Warning:</b> Do not use if pregnant, nursing, or if taking cyclosporine or anticoagulant medication.</p>	<p><b>Patient benefits</b></p> <ul style="list-style-type: none"> <li>• Provides a full spectrum of macro- and trace minerals including calcium, magnesium, zinc, manganese, and selenium that naturally comprise healthy bone</li> <li>• Supplies vitamin D to support bone mineralization and quality*</li> <li>• Provides bioactive bone growth factors, type 1 collagen protein, and the intact organic portion of bone for enhanced bone nourishment*</li> </ul> <p><b>Three capsules daily supply</b> Vitamin D (as cholecalciferol) 600 IU, Calcium (as MCHC) 684 mg, Phosphorus (as MCHC) 357 mg, Microcrystalline Hydroxyapatite Concentrate (MCHC) 3,036 mg.</p> <p><b>Other ingredients:</b> Gelatin, microcrystalline cellulose, and magnesium stearate.</p> <p><b>Recommendations:</b> Three capsules daily.</p> <p><b>Form:</b> 90 and 180 Capsule Bottles</p> <p><b>Additional Cal Apatite® Formulas</b> Cal Apatite® original formula, Cal Apatite® with Magnesium, Cal Apatite® Chewables, Cal Apatite Plus® with ipriflavone and vitamin D, and Cal Apatite® 1000 with concentrated calcium</p>

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“My body changed after menopause.  
Thanks to Oстера, my life doesn't have to.”



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These certifications for Good Manufacturing Practices demonstrate the Metagenics commitment to purity and quality.

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