



CLINICAL STUDY REFERENCES: Calcium & Bone Health (HYDROXYAPATITE, CITRATE & MALATE, IPRIFLAVONE)

Familiarizing oneself with relevant scientific research is critical to understanding nutritional supplements at a deeper level. Clinical studies on supplement ingredients can be accessed in many ways, from visiting a local University library to using an online database such as PubMed. (See last page to learn more about using the PubMed database.) Some useful studies on ingredients related to **calcium and bone health** are noted below.

MICROCRYSTALLINE CALCIUM HYDROXYAPATITE

Age and Ageing 1973 Nov;2(4):230-4

The Effect of Whole-Bone Extract on 47 Ca Absorption In the Elderly.

Windsor AC, Misra DP, Loudon JM, Staddon GE
Department of Geriatric Medicine, Bristol General Hospital

Am J Clin Nutr 1982 36;426-430

Vitamin D, hydroxyapatite, and calcium gluconate in treatment of cortical bone thinning in postmenopausal women with primary biliary cirrhosis.

Epstein O, Kato Y, Dick R, Sherlock S

Osteoporos Int 1995 Jan;5(1):30-4

Comparison of the treatment effects of ossein-hydroxyapatite compound and calcium carbonate in osteoporotic females.

Ruegsegger P, Keller A, Dambacher MA
Institute for Biomedical Engineering, University and Federal Institute of Technology, Zurich, Switzerland

Curr Med Res Opin 1984;8(10):734-42

Clinical trial of microcrystalline hydroxyapatite compound ('Ossopan')* in the prevention of osteoporosis due to corticosteroid therapy.

Pines A, Raafat H, Lynn AH, Whittington J
Hertford County Hospital and East Herts Hospital, Hertford, and Advisory Services (Clinical and General) Ltd, London, England

British Medical Journal 1978 Oct 21;2(6145):1124

Microcrystalline calcium hydroxyapatite compound in corticosteroid-treated rheumatoid patients: a controlled study.

Nilsen KH, Jayson MI, Dixon AST
Department of Medicine, University of Bristol, and Royal Nations Hospital for Rheumatic Diseases, Bath

CALCIUM CITRATE, MALATE & OTHER SALTS

J Am Coll Nutr 1990 Dec;9(6):583-7

Superior calcium absorption from calcium citrate than calcium carbonate using external forearm counting.

Harvey JA, Kenny P, Poindexter J, Pak CY
Center for Mineral Metabolism and Clinical Research, University of Texas Southwestern Medical Center, Dallas 75235.

Am J Ther 1999 Nov;6(6):313-21

Meta-analysis of calcium bioavailability: a comparison of calcium citrate with calcium carbonate.

Sakhaee K, Bhuket T, Adams-Huet B, Rao DS
University of Texas Southwestern Medical School, Center for Mineral Metabolism and Clinical Research, Dallas, TX

J Clin Endocrinol Metab 1985 Aug;61(2):301-3

Calcium bioavailability from calcium carbonate and calcium citrate.

Nicar MJ, Pak CY

Osteoporos Int 2004 Apr;15(4):290-4. Epub 2004 Jan 13

Comparison of the effects of calcium loading with calcium citrate or calcium carbonate on bone turnover in postmenopausal women.

Kenny AM, Prestwood KM, Biskup B, Robbins B, Zayas E, Kleppinger A, Burleson JA, Raisz LG
Center on Aging, MC-5215, University of Connecticut Health Center, Farmington, CT 06030-5215, US.

Osteoporos Int 1996;6(4):314-9

The effect of a short course of calcium and vitamin D on bone turnover in older women.

Prestwood KM, Pannullo AM, Kenny AM, Pilbeam CC, Raisz LG
Travelers Center on Aging, University of Connecticut Health Center, Farmington 06030-5215, USA

(CALCIUM CITRATE, MALATE & OTHER SALTS CONT'D)

N Engl J Med 1990 Sep 27;323(13):878-83

A controlled trial of the effect of calcium supplementation on bone density in postmenopausal women.

Dawson-Hughes B, Dallal GE, Krall EA, Sadowski L, Sahyoun N, Tannenbaum S
U.S. Department of Agriculture Human Nutrition Research Center on Aging at Tufts University, Boston, MA 02111.

J Nutr 1994 Jul;124(7):1060-4

Spinal bone loss in postmenopausal women supplemented with calcium and trace minerals.

Strause L, Saltman P, Smith KT, Bracker M, Andon MB
Department of Biology, University of California at San Diego, La Jolla 92093

J Agric Food Chem 2002 Aug 14;50(17):4974-5

Absorption of calcium fumarate salts is equivalent to other calcium salts when measured in the rat model.

Weaver CM, Martin BR, Costa NM, Saleeb FZ, Huth PJ
Department of Foods and Nutrition, Purdue University, 1264 Stone Hall, West Lafayette, Indiana 47907-1264, USA.

Osteoporos Int 1993 Sep;3(5):271-5

Acute biochemical variations induced by four different calcium salts in healthy male volunteers.

Reginster JY, Denis D, Bartsch V, Deroisy R, Zegels B, Franchimont P
Centre Universitaire d'Investigation du Metabolisme Osseux et du Cartilage Articulaire, University of Liege, Belgium

IPRIFLAVONE

Calcif Tissue Int 1997;61 Suppl 1:S23-7

Efficacy of ipriflavone in established osteoporosis and long-term safety.

Agnusdei D, Bufalino L
Institute of Internal Medicine and Medical Pathology, University of Siena, Italy

Altern Med Rev 1999 Feb;4(1):10-22

Ipriflavone: an important bone-building isoflavone.

Head KA

J Endocrinol Invest 1992 Nov;15(10):755-61

Lack of any estrogenic effect of ipriflavone in postmenopausal women.

Melis GB, Paoletti AM, Cagnacci A, Bufalino L, Spinetti A, Gambacciani M, Fioretti P
Istituto di Ginec. Ostetrica e Fisiopatologia della Riproduzione Umana, Un. of Cagliari, Italy.

(IPRIFLAVONE CONT'D)

Menopause 1999 Fall;6(3):233-41

Isoflavones and postmenopausal bone health: a viable alternative to estrogen therapy?

Scheiber MD, Rebar RW
Department of Obstetrics and Gynecology, University of Cincinnati College of Medicine, Ohio

Gynecol Endocrinol 1997 Aug;11(4):289-93

Bone density changes in postmenopausal women with the administration of ipriflavone alone or in association with low-dose estrogen replacement therapy.

de Aloysio D, Gambacciani M, Altieri P, et al.
Dept. of Obstet. and Gyn., U of Bologna, Italy

Nippon Rinsho 1998 Jun;56(6):1537-43

Ipriflavone.

Kitatani K, Morii H
Osaka City University Medical School, Second Department of Internal Medicine, Japan

Clin Obstet Gynecol 2000 Mar;43(1):162-83

Alternative therapies for menopause.

Kass-Annese B
Department of Obstetrics and Gynecology, Harbor UCLA Medical Center, Torrance, CA

J Endocrinol Invest 1993 May;16(5):333-7

Effects of ipriflavone administration on bone mass & metabolism in ovariectomized women.

Gambacciani M, Spinetti A, Cappagli B, et al.
Istituto di Clinica Ostetrica e Ginecologica, Un. di Pisa, Italy

Maturitas 1997 Sep;28(1):75-81

Effects of combined low dose of the isoflavone derivative ipriflavone and estrogen replacement on bone mineral density and metabolism in postmenopausal women.

Gambacciani M, Ciaponi M, Cappagli B, et al.
Dept. of Obstetrics and Gynecology, Univ. of Pisa, Italy

Calcif Tissue Int 1997;61(7):19-22

Effect of chronic treatment with ipriflavone in postmenopausal women with low bone mass.

Gennari C, Adami S, Agnusdei D, et al.
Internal Med and Med. Path. Inst., U of Siena, Policlinico "Le Scotte", Siena, Italy

Am J Phys Med Rehabil 1999 Sep-Oct;78(5):457-63

Effect of ipriflavone on bone in elderly hemiplegic stroke patients with hypovitaminosis D.

Sato Y, Kuno H, Kaji M, et al.
Department of Neurology, Futase Social Insurance Hospital, Izuka, Japan

Bone Miner 1992 Oct;19 Suppl 1:S27-33

Effects of ipriflavone on bone remodeling in primary hyperparathyroidism.

Mazzuoli G, Romagnoli E, Carnevale V, Scarda A, Scarnecchia L, et al.
Cattedra di Medicina Interna, Univ of Rome, La Sapienza, Italy

TIPS & GUIDELINES FOR USING PUBMED

PubMed is an online research database. It provides access to literally millions of clinical studies that have been published in selected scientific journals. The PubMed database is part of the National Library of Medicine at the National Institutes of Health.

To research a topic on PubMed, go to: www.pubmed.com. Doing this will redirect you to the site's actual URL: www.ncbi.nlm.nih.gov/entrez/query.fcgi?DB=pubmed. (You may also type the actual URL into your browser – it's just more complicated. Save the page as a bookmark to avoid this step in the future.)

Once on the PubMed site, find the search bar near the top of the page and enter the keywords you desire. Hit the Go button to the right of the search bar (or your "return" key) to bring up studies in the database that are relevant to your search.

TIPS FOR SUCCESSFUL SEARCHING

- **Narrow down your search by entering more than one keyword or phrase.**
- **Surround phrases with quotation marks.**
(Example: instead of calcium citrate, type "calcium citrate.")
- **Use commas or the word AND** in upper case letters to separate multiple keywords or phrases.
(Example: instead of calcium citrate bone, type in "calcium citrate" AND bone.)
- **To find a specific study whose authors or title are known, include one or more last names** of the authors and a few choice words from the title as keywords. (Note: This is the easiest way to pull up the studies noted in Pioneer's Clinical Study References.)

VIEWING ABSTRACTS VS SUMMARIES

When you hit "Go," studies will be displayed in what is called **summary** form. The summary only provides journal name & volume number, date of publication, author names and title - the same points noted in these clinical reference pages. For information about the study's results and conclusions, you will want to view an **abstract** of the study - a paragraph describing a study's objective, procedure and findings.*

- **To view a single abstract**, click on the authors' names (appearing in blue) in the summary.
- **To view several abstracts**, click in the boxes located to the left of the summaries. Then select "Abstract" from the pull down Display menu (located below the left side of the search bar, under the folder icons).
- **To view additional studies on the same topic**, click on the words "Related Articles" (appearing in blue) located to the right of each study summary or abstract.

**Note: Not all studies on PubMed are available as abstracts, but it is sometimes possible to find the abstract – even the full text – elsewhere on line by entering the title or author in a search engine, such as Google or Dogpile.*

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