



## Eucommia

(*E. ulmoides*)

None

Eucommia (*E. ulmoides*), is an authentic herb from Tongjiang, Sichuan Province, China. Its active ingredient, pinoresinol diglucoside, has been found to increase bone density, improve bone structure, and regulate bone metabolism all while promoting bone formation and preventing bone resorption<sup>[1]</sup>. Various in vitro OVX rat model studies also showed delays in cartilage degeneration and reduced inflammation when exposed to Eucommia (*E. ulmoides*)<sup>[2][3][4]</sup>. A randomized, controlled clinical trial was conducted to measure the changes in bone pain and function in patients with mild OP  $\geq$  70 years old with a 6-month supplementation of Eucommia (*E. ulmoides*) tablet. The total effective rate was 100%<sup>[5]</sup>.



## Drynaria

(*D. fortunei*)

None

Drynaria (*D. fortunei*), the dry rhizome of the water dragon orthopedic plant Quercetin, is a medicinal herb found growing on rocks and trees from Guizhou Province, China. It is well known to strengthen bones and improve kidney function through the active compound naringin, which is a flavonoid boasting antioxidant and anti-carcinogenic properties. Administration of naringin further increased bone strength and bone ultrastructure<sup>[6]</sup>. One randomized, placebo-controlled clinical trial was used to measure the changes in bone density and function in patients with mild OP  $\geq$  60 years old with a 6-month supplementation of Drynaria (*D. fortunei*) prescription. The total effective rate was 90%<sup>[7]</sup>.



## Chinese Dodder

(*C. chinensis Lam*)

None

Chinese Dodder (*C. chinensis Lam*), an annual parasitic herbaceous plant in the Convolvulaceae family, the *Cuscuta* we used comes from the Daotian District of Inner Mongolia, China. Its bioactive component, hyperoside, can significantly promote osteoblast activity, whilst simultaneously regulating cartilage and bone metabolism. In rodent OA models, rats were administered 100 mg/kg of hyperoside for three weeks through intragastric means and were found to have increased bone strength and bone length by protecting osteoblasts thereby suppressing osteoclastogenesis<sup>[8]</sup>. One randomized controlled trial was conducted to measure the changes in bone pain and function in patients with mild OP  $\geq$  38 years old. The BMD of OP patients increased significantly after treatment with a 6-month supplementation of Chinese Dodder (*C. chinensis Lam*) Prescription<sup>[9]</sup>.

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