

### Osteoporosis

Osteoporosis is a degenerative skeletal disease characterized by a deterioration of bone tissue. Patients with osteoporosis are at risk for suffering multiple fractures and other serious disabilities. Approximately 10 million Americans over age 50 suffer from osteoporosis, according to the US Surgeon General's office, and another 34 million are at risk for developing the disease.

Initial references regarding the potential use of cannabinoids to protect against the onset of osteoporosis are available in the scientific literature beginning in the early 1990s.[1] To date, however, no clinical work has taken place investigating the use of cannabis for this indication.

Writing in the January 2006 issue of the *Proceedings of the National Academy of Sciences*, investigators at the Bone Laboratory of the Hebrew University in Jerusalem reported that the administration of the synthetic cannabinoid agonist HU-308 slowed the development of osteoporosis, stimulated bone building and reduced bone loss in animals.[2] Follow up research published in the *Annals of the New York Academy of Sciences* in 2007 reported that the activation of the CB2 cannabinoid receptor reduced experimentally-induced bone loss and stimulated bone formation.[3] Investigators have previously reported that mice deficient in the CB2 cannabinoid receptor experienced age-accelerated bone loss reminiscent of human osteoporosis.[4]

Scientists now speculate that the main physiologic involvement of specific endocannabinoid receptors (CB2 receptors) is to maintain "bone remodeling at balance, thus protecting the skeleton against age-related bone loss,"[5] leading some experts to believe that cannabinoids may be "a promising target novel target for anti-osteoporotic drug development." [6]

#### REFERENCES

[1] Vratislav Schrieber. 1995. *Endocrinology* 1994-1995. *Casopis Lekarů Ceských (Czech Republic)* 134: 535-536.

[2] Ofek et al. 2006. Peripheral cannabinoid receptor, CB2, regulates bone mass. *Proceedings of the National Academy of Sciences of the United States of America* 103: 696-701.

[3] Itia Bab. 2007. Regulation of Skeletal Remodeling by the Endocannabinoid System. *Annals of the New York Academy of Sciences* 1116: 414-422.

[4] Ofek et al. 2006. op. cit.

[5] Bab et al. 2009. Cannabinoids and the skeleton: from marijuana to reversal of bone loss. *Annals of Medicine* 41: 560-567.

[6] Itia Bab. 2007. op. cit.