joint structure and function. As the population continues to age, the number of individuals having bone and joint issues will undoubtedly continue to increase.

[0004] Recently, the Surgeon General reported that over 1.5 million osteoporotic fractures occur in the United States each year, leading to more than 500,000 hospitalizations, over 800,000 emergency room encounters, more than 2.6 million physician office visits, and the placement of nearly 180,000 individuals into nursing homes. These fractures are not only self-limiting and in some instances, debilitating, to the individual, but caring for these fractures is expensive and may require long term care.

[0005] Moreover, many conditions of impaired bone health or joint health are, or become, chronic in nature, thereby necessitating long term therapies. As such, there is a continuing need for a long term, safe means of effectively improving bone health, joint health, or both in individuals.

SUMMARY

[0006] The general inventive concepts relate to methods and compositions for improving bone health, joint health, or both in an individual in need thereof. By way of example to illustrate various aspects of the general inventive concepts, several exemplary embodiments of methods and compositions (*e.g.*, nutritional compositions) are provided herein.

[0007] In one aspect, there is provided use of a nutritional composition comprising at least one source of protein in an amount sufficient to provide about 5 grams to about 50 grams of protein per serving, and effective amounts of Curcumin, Vitamin K2, Vitamin D3, and calcium in the manufacture of a medicament for maintaining bone quality in an individual;

whereby the bone quality of the subject is maintained upon consumption of the nutritional composition.

[0007a] In one exemplary embodiment, a composition comprising Curcumin and Vitamin K2 for use in treating or preventing osteoarthritis, rheumatoid arthritis, systemic lupus erythematosus (SLE), osteopenia, or osteoporosis in an individual in need thereof is provided. Use of the composition comprising Curcumin and Vitamin K2 may inhibit one or more of osteoclast differentiation, collagen degradation, and bone resorption. In one exemplary embodiment, the composition is a nutritional composition.

[0008] In one exemplary embodiment, the composition comprising Curcumin and Vitamin K2 for use in treating or preventing osteoarthritis, rheumatoid arthritis, SLE, osteopenia, or osteoporosis in an individual in need thereof comprises about 0.001% to about 3.4% of Curcumin by weight of the composition and about 0.0001% to about 0.1% of Vitamin K2 by weight of the composition.

18. ~~A method for maintaining bone quality in an individual in need thereof, the method comprising:~~

~~administering to the individual in need thereof~~ Use of a nutritional composition comprising at least one source of protein in an amount sufficient to provide about 5 grams to about 50 grams of protein per serving, and effective amounts of Curcumin, Vitamin K2, Vitamin D3, and calcium in the manufacture of a medicament for maintaining bone quality in an individual;

whereby the bone quality of the subject is maintained upon consumption of the nutritional composition.

19. Use of Curcumin and Vitamin K2 in the preparation of a nutritional composition for treating or preventing osteoarthritis, systemic lupus erythematosus, rheumatoid arthritis, osteopenia, or osteoporosis.

20. The use according to claim 19, wherein the composition comprises about 0.001% to about 3.4% of Curcumin by weight of the composition and about 0.0001% to about 0.1% of Vitamin K2 by weight of the composition.

21. The use according to claim 19 or 20, wherein the Curcumin is bioavailable Curcumin and the Vitamin K2 is menaquinone-7.

22. The use according to any one of claims 19-21, wherein the composition further comprises Vitamin D3 and calcium.

23. The use according to claim 22, wherein the composition comprises, per serving or dose, about 160 IU to about 1,000 IU of Vitamin D3 and about 150 milligrams to about 800 milligrams of calcium.

24. The use according to any one of claims 19-23, wherein the composition further comprises one or more of at least one source of protein, at least one source of carbohydrate and at least one source of fat.