BACKGROUND OF THE INVENTION

[0005] Periodontal infections and gingival inflammations are known to be major causes of periodontal diseases. Both are chronic inflammatory diseases, and as they progress, the periodontal tissue is destroyed and the alveolar bone is reduced due to bone resorption causing loss of tooth support in some cases. In addition, the alveolar bone may become defective due to perforations caused by surgical treatments or apical lesions from progressed dental caries.

SUMMARY OF THE INVENTION

[0006] The invention is directed to methods of using a sclerostin inhibitor to enhance alveolar bone. In one aspect, the present disclosure refers to the use of an anti-sclerostin antibody in the manufacture of a medicament for increasing alveolar bone height in a subject suffering from alveolar bone loss, wherein the anti-sclerostin antibody binds to SEQ ID NO: 1) and wherein the anti-sclerostin antibody cross-blocks or is cross-blocked by an antibody that comprises a) CDR sequences of SEQ ID NOs:48, 49, and 50 and CDR sequences of SEQ ID NOs:45, 46, and 47; b) CDR sequences of SEQ ID NOs:42, 43, and 44 and CDR sequences of SEQ ID NOs:39, 40, and 41; c) CDR sequences of SEQ ID NOs:275, 276, and 277 and CDR sequences of SEQ ID NOs:287, 288, and 289;d) CDR sequences of SEQ ID NOs:278, 279, and 280 and CDR sequences of SEQ ID NOs:290, 291, and 292;e) CDR sequences of SEQ ID NOs:281, 282, and 283 and CDR sequences of SEQ ID NOs:293, 294, and 295;f) CDR sequences of SEQ ID NOs:284, 285, and 286 and CDR sequences of SEQ ID NOs:296, 297, and 298; g) CDR sequences of SEQ ID NOs:116, 237, and 238 and CDR sequences of SEQ ID NOs:266, 267, and 268; or h) CDR sequences of SEQ ID NOs:242, 243, and 244 and CDR sequences of SEQ ID NOs:272, 273, and 274. In one example, described herein is a method of treating alveolar bone loss in a subject comprising administering a sclerostin inhibitor (e.g., an anti-sclerostin antibody or antibody fragment) in an amount effective to decrease the distance between the cement-enamel junction and the alveolar bone crest, optionally at a dose from about 5 mg to about 1,000 mg per week. In one example, the sclerostin inhibitor is administered twice a week for the duration of the treatment period. In another example, the sclerostin inhibitor is administered once a week for the duration of the treatment period.

WHAT IS CLAIMED IS:

1. Use of an anti-sclerostin antibody in the manufacture of a medicament for increasing alveolar bone height in a subject suffering from alveolar bone loss, wherein the anti-sclerostin antibody binds to SEQ ID NO: 1) and wherein the anti-sclerostin antibody cross-blocks or is cross-blocked by an antibody that comprises

a) CDR sequences of SEQ ID NOs:48, 49, and 50 and CDR sequences of SEQ ID NOs:45, 46, and 47;

b) CDR sequences of SEQ ID NOs:42, 43, and 44 and CDR sequences of SEQ ID NOs:39, 40, and 41;

c) CDR sequences of SEQ ID NOs:275, 276, and 277 and CDR sequences of SEQ ID NOs:287, 288, and 289;

d) CDR sequences of SEQ ID NOs:278, 279, and 280 and CDR sequences of SEQ ID NOs:290, 291, and 292;

e) CDR sequences of SEQ ID NOs:281, 282, and 283 and CDR sequences of SEQ ID NOs:293, 294, and 295;

f) CDR sequences of SEQ ID NOs:284, 285, and 286 and CDR sequences of SEQ ID NOs:296, 297, and 298;

g) CDR sequences of SEQ ID NOs:116, 237, and 238 and CDR sequences of SEQ ID NOs:266, 267, and 268; or

h) CDR sequences of SEQ ID NOs:242, 243, and 244 and CDR sequences of SEQ ID NOs:272, 273, and 274.

2. The use of claim 1, wherein the anti-sclerostin antibody is to be administered in an amount from about 120-270 mg.

3. The use of claim 1, wherein the anti-sclerostin antibody is to be administered twice a week.

4. The use of claim 1, wherein the anti-sclerostin antibody is to be administered locally to diseased gingival area or diseased periodontal pocket of the subject.

5. The use of any one of claims 1-4, wherein the treating further comprises that a standard of care therapeutic selected from the group consisting of doxycycline or chemically modified tetracycline-3 (CMT-3) is to be administered prior to administration the anti-sclerostin antibody.

6. The use of any one of claims 1-5, wherein the treatment further comprises that a second bone-enhancing therapeutic is to be administered, selected from the group consisting of parathyroid hormone, teriparatide, a bisphosphonate, a Receptor Activator of Nuclear Kappa B Ligand (RANKL) antibody and a dickkopf (DKK-1) antibody.

7. The use of claim 7, wherein the second bone-enhancing therapeutic is to be administered after the treatment period with the anti-sclerostin antibody has ended.

8. The use of claim 1, wherein the anti-sclerostin antibody is to be administered for a second period of time in an amount sufficient to maintain alveolar bone.

9. The use of any one of claims 1-8, wherein the anti-sclerostin antibody is an immunoglobulin comprising a heavy chain and a light chain.

10. The use of any one of claims 1-9, wherein the anti-sclerostin antibody demonstrates a binding affinity for sclerostin of SEQ ID NO:1 of less than or equal to 1×10^{-9} M.