cement, and that the difference in structure is at least one of the reasons that the present cement is more bioabsorbable than hydroxyapatite.

EXAMPLE 6

This example illustrates the biocompatibility and bioabsorbability of the subject cement.

A sample of the subject cement was prepared as described in Example 4 and was cured in the presence of blood serum. When the cement was fully cured, the surface of the cement was inoculated with avian primary growth plate chondrocytes, and the mixture of Dulbeccos's Modified Eagles' Medium containing 10% serum. Cement and chondrocytes was cultured in the medium at 37° C. for a period of 30 days.

After 30 days, a scanning electron micrograph showed that the surface of the cement had been colonized by growing chondrocytes that were apparently attached to the surface of the cement. FIG. **5** shows the surface of the cement prior to the inoculation by chondrocytes (left side micrographs) and after a period of incubation of 30 days (right side micrographs), and at magnifications of 250× (top row of micrographs) and 1000× (lower row of micrographs). This was believed to show that the subject cement was biocompatible with living cells, and in fact, could support growth of cells attached to the surface of the cured cement.

One sample of the cement that had been covered with a surface layer of chondrocytes was treated with a solution containing 5% sodium hypochlorite (NaOCl) for 24 hours at 25° C. to remove the chondrocytes from the inorganic material. FIG. **6** shows micrographs taken at 1000× of the surface covered with chondrocytes prior to hypochlorite digestion (left panel) and the same surface after 24 hr. hypochorite digestion (right panel). It is believed that the exposed surface of the cement after removal of the chondrocytes (the area outlined with a black line) shows some degree of resorption and remodeling of the cement by the chondrocytes. This is believed to show that the subject cement can be resorbed by living cells at a reasonably high rate.

EXAMPLE 7

This illustrates the use of the subject biocompatible cement for repair of a fractured avian metatarsus.

A freshly obtained avian metatarsal bone was fractured at approximately its mid-point, as shown in the upper left photograph of FIG. **7**. The subject cement, prepared as described in Example 4, was injected into the interior portion of the metatarsus, as shown in the upper right photograph of FIG. **7**, and the bone was repositioned into proper anatomical alignment. After a period of 59 minutes, the flesh of the leg was removed to expose the metatarsus. As shown in FIG. **7** (lower photograph), the cement had developed sufficient strength to stabilize the bone, and in fact, it is believed that the bonded bone had developed strength sufficient for normal use by a living fowl. It is believed that this illustrated the utility of the cement as a bone repair cement, and for the repair of many types of bodily hard tissue.

All references cited in this specification, including without limitation all papers, publications, patents, patent applications, presentations, texts, reports, manuscripts, brochures, books, internet postings, journal articles, periodicals, and the like, are hereby incorporated by reference into this specification in their entireties. The discussion of the references herein is intended merely to summarize the assertions made by their authors and no admission is made that any reference constitutes prior art. Applicants reserve the right to challenge the accuracy and pertinency of the cited references.

In view of the above, it will be seen that the several advantages of the invention are achieved and other advantageous results obtained.

As various changes could be made in the above methods and compositions without departing from the scope of the invention, it is intended that all matter contained in the above description and shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. A cement powder comprising reactive tricalcium phosphate nanoparticles and which cures to form a cement having a major X-ray diffraction peak at a value of 2θ=30.6 degrees and lacking a major peak at a value of 2θ=25.9 degrees.

2. The cement powder according to claim **1**, wherein the cement powder comprises at least 50% by weight of the reactive tricalcium phosphate nanoparticles.

3. The cement powder according to claim **1**, wherein the cement powder has a calcium:phosphate molar ratio of not over about 1.5:1.

4. The cement powder according to claim **1**, further comprising a carbonate salt having a counterion selected from the group consisting of ammonia, a member of Group IA or Group IIA, and mixtures thereof, and a phosphate salt having a counterion selected from the group consisting of ammonia, a member of Group IA or Group IIA, and mixtures thereof.

5. The cement powder according to claim **4**, wherein the counterion is calcium and the phosphate salt is calcium bis(dihydrogenphosphate) monohydrate.

6. The cement powder according to claim **5**, wherein the reactive tricalcium phosphate nanoparticles are present in an amount between about 50% and 90%, calcium carbonate is present in an amount between about 0% and 25%, and calcium bis(dihydrogenphosphate) monohydrate is present in an amount between about 0% and 25%, all in percent by weight of the cement powder.

7. The cement powder according to claim **6**, wherein the reactive tricalcium phosphate nanoparticles are present in an amount between about 70% and 90%, calcium carbonate is present in an amount between about 5% and 15%, and calcium bis(dihydrogenphosphate) monohydrate is present in an amount between about 8% and 18%, all in percent by weight of the cement powder.

8. The cement powder according to claim **1**, comprising dry polyacrylic acid.

9. The cement powder according to claim **8**, wherein the dry polyacrylic acid is present in an amount of between about 0.1% and 5% by weight of the cement powder.

10. The cement powder according to claim **9**, comprising dry polyacrylic acid in an amount of about 1.5% by weight of the cement powder.

11. The cement powder according to claim **10**, comprising reactive tricalcium phosphate nanoparticles in an amount of about 80%, calcium carbonate in an amount of about 9%, and calcium bis(dihydrogenphosphate) monohydrate in an amount of about 12%, all in percent by weight of the powder.

12. A cement paste comprising a lubricating liquid which is intermixed with a cement powder that includes reactive tricalcium phosphate nanoparticles and which cures to form