CLAIMS

The invention is claimed as follows:

1. Use of pyrophosphate ranging between 30 μM and 150 μM in the manufacture of a medicament for reducing, preventing or reducing the progression of vascular calcification in a patient wherein the pyrophosphate is comprised in a dialysis solution and wherein the solution is to be administered to the patient during peritoneal dialysis therapy.

2. The use of Claim 1, wherein the dialysis solution comprises a concentrate.

3. The use of Claim 1, wherein the pyrophosphate is selected from the group consisting of pyrophosphoric acid, salt of pyrophosphate and combinations thereof.

4. The use of Claim 1, wherein the pyrophosphate is tetra sodium pyrophosphate.

5. The use of Claim 1, wherein the dialysis solution comprises a dialysis component selected from the group consisting of osmotic agents, buffers, electrolytes and combinations thereof.

6. The use of Claim 5, wherein the osmotic agent is selected from the group consisting of glucose, glucose polymers, glucose polymer derivatives, cyclodextrins, modified starch, hydroxyethyl starch, polyols, fructose, amino acids, peptides, proteins, amino sugars, glycerol, N-acetyl glucosamine and combinations thereof.

7. The use of Claim 5, wherein the buffer is selected from the group consisting of bicarbonate, lactate, pyruvate, acetate, citrate, tris, amino acids, peptides, an intermediate of the KREBS cycle and combinations thereof.

8. The use of Claim 1, wherein the peritoneal dialysis therapy is selected from the group consisting of automated peritoneal dialysis, continuous ambulatory peritoneal dialysis and continuous flow peritoneal dialysis.

9. A dialysis solution comprising a therapeutically effective amount of pyrophosphate ranging between 30 μM and 150 μM.

10. The dialysis solution of Claim 9, wherein the dialysis solution comprises a concentrate.

11. The dialysis solution of Claim 9, wherein the pyrophosphate is selected from the group consisting of pyrophosphoric acid, salt of pyrophosphate and combinations thereof.

12. The dialysis solution of Claim 9, wherein the pyrophosphate is tetra sodium pyrophosphate.

13. The dialysis solution of Claim 9 comprising a dialysis component selected from the group consisting of osmotic agents, buffers, electrolytes and combinations thereof.

14. The dialysis solution of Claim 13, wherein the osmotic agent is selected from the group consisting of glucose, glucose polymers, glucose polymer derivatives, cyclodextrins, modified starch, hydroxyethyl starch, polyols, fructose, amino acids, peptides, proteins, amino sugars, glycerol, N-acetyl glucosamine and combinations thereof.

15. The dialysis solution of Claim 13, wherein the buffer is selected from the group consisting of bicarbonate, lactate, pyruvate, acetate, citrate, tris, amino acids, peptides, an intermediate of the KREBS cycle and combinations thereof.

16. The dialysis solution of Claim 9 comprising at least two dialysis parts housed separately and the pyrophosphate is present with at least one of the dialysis parts and sterilized with said dialysis part.

17. A multi-part dialysis product comprising:

a first part comprising at least one of a concentrated pyrophosphate solution or a pyrophosphate powder; and

a second part comprising a dialysis solution, the combination of the first part and the second part forming a mixed solution comprising a therapeutically effective amount of pyrophosphate ranging between 30 μM and 150 μM.

18. The multi-part dialysis product of Claim 17, wherein the dialysis solution comprises a dialysis component selected from the group consisting of osmotic agents, buffers, electrolytes and combinations thereof.

19. The multi-part dialysis product of Claim 18, wherein the osmotic agent is selected from the group consisting of glucose, glucose polymers, glucose polymer derivatives, cyclodextrins, modified starch, hydroxyethyl starch, polyols, fructose, amino acids, peptides, proteins, amino sugars, glycerol, N-acetyl glucosamine and combinations thereof.

20. The multi-part dialysis product of Claim 18, wherein the buffer is selected from the group consisting of bicarbonate, lactate, pyruvate, acetate, citrate, tris, amino acids, peptides, an intermediate of the KREBS cycle and combinations thereof.

21. A solution comprising a therapeutically effective amount of pyrophosphate ranging between 30 μM and 150 μM.

22. A multi-part dialysis product comprising:

a first part comprising at least one of a concentrated pyrophosphate solution or a pyrophosphate powder; and

a second part comprising a dialysis solution, wherein the first part is stored in a separate container from the second part, the combination of the first part and the second part capable of forming a mixed solution comprising a therapeutically effective amount of pyrophosphate ranging between 30 μM and 150 μM.

23. Use of pyrophosphate ranging between 30 μM and 150 μM in the manufacture of a medicament for reducing, preventing or reducing the progression of vascular calcification in a patient, wherein the patient is to be administered during peritoneal dialysis therapy at least one of a concentrated pyrophosphate solution or a pyrophosphate powder that is diluted prior to or during the administration to provide the patient a therapeutically effective amount of pyrophosphate.

24. The use of Claim 23, wherein the concentrated pyrophosphate solution is diluted with a separate dialysis solution prior to or during the administration.

CLAIMS

The invention is claimed as follows:

1. Use of pyrophosphate ranging between 30 μM and 400 μM in the manufacture of a medicament for reducing, preventing or reducing the progression of vascular calcification in a patient wherein the pyrophosphate is comprised in a dialysis solution and wherein the solution is to be administered to the patient during peritoneal dialysis therapy.

2. The use of Claim 1, wherein the pyrophosphate ranges between 30 μM and 300 μM.

3. The use of Claim 1, wherein the dialysis solution comprises a concentrate.

4. The use of Claim 1, wherein the pyrophosphate is selected from the group consisting of pyrophosphoric acid, salt of pyrophosphate and combinations thereof.

5. The use of Claim 1, wherein the pyrophosphate is tetra sodium pyrophosphate.

6. The use of Claim 1, wherein the dialysis solution comprises a dialysis component selected from the group consisting of osmotic agents, buffers, electrolytes and combinations thereof.

7. The use of Claim 6, wherein the osmotic agent is selected from the group consisting of glucose, glucose polymers, glucose polymer derivatives, cyclodextrins, modified starch, hydroxyethyl starch, polyols, fructose, amino acids, peptides, proteins, amino sugars, glycerol, N-acetyl glucosamine and combinations thereof.

8. The use of Claim 6, wherein the buffer is selected from the group consisting of bicarbonate, lactate, pyruvate, acetate, citrate, tris, amino acids, peptides, an intermediate of the KREBS cycle and combinations thereof.

9. The use of Claim 1, wherein the peritoneal dialysis therapy is selected from the group consisting of automated peritoneal dialysis, continuous ambulatory peritoneal dialysis and continuous flow peritoneal dialysis.

10. A dialysis solution comprising a therapeutically effective amount of pyrophosphate ranging between 30 μM and 400 μM.

11. The dialysis solution of Claim 10, wherein the pyrophosphate ranges between about 30 μM and 300 μM.

12. The dialysis solution of Claim 10, wherein the dialysis solution comprises a concentrate.

13. The dialysis solution of Claim 10, wherein the pyrophosphate is selected from the group consisting of pyrophosphoric acid, salt of pyrophosphate and combinations thereof.

14. The dialysis solution of Claim 10, wherein the pyrophosphate is tetra sodium pyrophosphate.

15. The dialysis solution of Claim 10 comprising a dialysis component selected from the group consisting of osmotic agents, buffers, electrolytes and combinations thereof.

16. The dialysis solution of Claim 15, wherein the osmotic agent is selected from the group consisting of glucose, glucose polymers, glucose polymer derivatives, cyclodextrins, modified starch, hydroxyethyl starch, polyols, fructose, amino acids, peptides, proteins, amino sugars, glycerol, N-acetyl glucosamine and combinations thereof.

17. The dialysis solution of Claim 15, wherein the buffer is selected from the group consisting of bicarbonate, lactate, pyruvate, acetate, citrate, tris, amino acids, peptides, an intermediate of the KREBS cycle and combinations thereof.

18. The dialysis solution of Claim 10 comprising at least two dialysis parts housed separately and the pyrophosphate is present with at least one of the dialysis parts and sterilized with said dialysis part.

19. A multi-part dialysis product comprising:

a first part comprising at least one of a concentrated pyrophosphate solution or a pyrophosphate powder; and

a second part comprising a dialysis solution, the combination of the first part and the second part forming a mixed solution comprising a therapeutically effective amount of pyrophosphate ranging between 30 μM and 400 μM.

20. The multi-part dialysis product of Claim 19, wherein the dialysis solution comprises a dialysis component selected from the group consisting of osmotic agents, buffers, electrolytes and combinations thereof.

21. The multi-part dialysis product of Claim 20, wherein the osmotic agent is selected from the group consisting of glucose, glucose polymers, glucose polymer derivatives, cyclodextrins, modified starch, hydroxyethyl starch, polyols, fructose, amino acids, peptides, proteins, amino sugars, glycerol, N-acetyl glucosamine and combinations thereof.

22. The multi-part dialysis product of Claim 20, wherein the buffer is selected from the group consisting of bicarbonate, lactate, pyruvate, acetate, citrate, tris, amino acids, peptides, an intermediate of the KREBS cycle and combinations thereof.

23. A solution comprising a therapeutically effective amount of pyrophosphate ranging between 30 μM and 400 μM.

24. A multi-part dialysis product comprising:

a first part comprising at least one of a concentrated pyrophosphate solution or a pyrophosphate powder; and

a second part comprising a dialysis solution, wherein the first part is stored in a separate container from the second part, the combination of the first part and the second part capable of forming a mixed solution comprising a therapeutically effective amount of pyrophosphate ranging between about 30 μM and 400 μM.

25. Use of pyrophosphate ranging between about 30 μM and 400 μM in the manufacture of a medicament for reducing, preventing or reducing the progression of vascular calcification in a patient, wherein the patient is to be administered during peritoneal dialysis therapy at least one of a concentrated pyrophosphate solution or a pyrophosphate powder that is diluted prior to or during the administration to provide the patient a therapeutically effective amount of pyrophosphate.

26. The use of Claim 25, wherein the concentrated pyrophosphate solution is diluted with a separate dialysis solution prior to or during the administration.