

Fig. 1

P A T E N T C L A I M S

1. A process for inhibiting browning of plant material, the method comprising the steps of:
- providing a plant material;
 - 5 - disrupting the plant material;
 - adding a chelating agent to the disrupted plant material to a concentration of 1-200 mM in the liquid fraction;
 - adjusting the pH of the plant material to a value of from about 2.3 to about 4.5.
- 10 2. A process for the manufacture of a soluble product from a plant material comprising the steps of:
- providing a plant material;
 - disrupting the plant material;
 - adding a chelating agent to the disrupted plant material to a concentration of 1-200 mM in the liquid fraction;
 - 15 - adjusting the pH of the plant material to a value of from about 2.3 to about 4.5;
 - contacting the plant material with a cation-exchange chromatography resin to separate a binding fraction from a non-binding fraction;
 - 20 - contacting the cation-exchange chromatography resin with an eluent solution to elute the soluble product from the binding fraction from the cation-exchange chromatography resin.
- 25 3. A process according to claim 2, wherein the pH of the plant material is further adjusted to a value from about 3.5 to about 5.5 prior to contacting the plant material with the cation-exchange chromatography resin.
- 30 4. A process according to claim 2 or 3, wherein the eluent solution has a higher pH, a higher ionic strength or a combination of a higher pH and a higher ionic strength than the plant material.
5. A process for the manufacture of a soluble component from a plant material comprising the steps of:
- providing a plant material;

- disrupting the plant material;
 - adding a chelating agent to the disrupted plant material to a concentration of 1-200 mM in the liquid fraction;
 - adjusting the pH of the plant material to a value of from about 2.3 to about 4.5;
 - contacting the plant material with a cation-exchange chromatography resin to separate a non-binding fraction from a binding fraction;
 - isolating the soluble component from the non-binding fraction.
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6. A process according to claim 5, wherein the step of isolating the soluble component from the non-binding fraction comprises adding a precipitating agent to the non-binding fraction to precipitate the soluble component.
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7. A process according to claim 6, further comprising a concentrating step prior to adding the precipitating agent.
8. A process according to claim 7, wherein the concentrating step is an ultrafiltration.
9. A process according to any one of claims 6 to 8, wherein the precipitating agent is an alcohol, for example isopropanol.
- 20
10. A process for the manufacture of an insoluble product from a plant material comprising the steps of:
- providing a plant material;
 - disrupting the plant material;
 - adding a chelating agent to the disrupted plant material to a concentration of 1-200 mM in the liquid fraction;
 - adjusting the pH of the plant material to a value of from about 2.3 to about 4.5;
 - separating the plant material into a liquid fraction and a solid fraction;
 - isolating an insoluble component from the solid fraction.
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11. A process according to claim 10, wherein the step of isolating said insoluble component comprises:
- adding water to the solid fraction to obtain a suspension of

insoluble components;

- adjusting the pH to a value of 5.8 or higher;
- screening the suspension to provide a fraction comprising coarse grained insoluble components of a size larger than about 500 μm and a fraction comprising fine grained insoluble components of a size smaller than about 500 μm ;
- isolating the insoluble product from the coarse grained insoluble components.

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10 12. A process according to claim 10, wherein the step of isolating said insoluble component comprises:

- adding water to the solid fraction to obtain a suspension of insoluble components;
- adjusting the pH to a value of 5.8 or higher;
- screening the suspension to provide a fraction comprising coarse grained insoluble components of a size larger than about 500 μm and a fraction comprising fine grained insoluble components of a size smaller than about 500 μm ;
- isolating the insoluble product from the fine grained insoluble components.

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20 13. A process for the manufacture of a protein product from a plant material comprising the steps of:

- providing a plant material;
- disrupting the plant material;
- adding a chelating agent to the disrupted plant material to a concentration of 1-200 mM in the liquid fraction;
- adjusting the pH of the plant material to a value of from about 2.3 to about 4.5;
- separating the plant material into a liquid fraction and a solid fraction;
- sedimenting a protein component from the liquid fraction;
- isolating the sedimented protein component.

25
30 14. A process according to claim 13 further comprising the step of separating the liquid fraction comprising the sedimented protein into an upper phase and a lower phase, and isolating the sedimented protein

component from the lower phase.

15. A process according to claim 13 or 14 further comprising the step of increasing the pH to 9-10 or above followed by an adjustment of the pH to about 2.3 to 6.0.

5 16. A process according to any one of claims 13 to 15, wherein the protein product comprises a protein with an isoelectric point (pI) within the range of about 4.5 to about 5.2.

10 17. A process according to any one of claims 13 to 16, comprising incubating the pH adjusted plant material with the added chelating agent for a period of 1 day up to about 12 months.

18. A process according to any one of claims 13 to 17 further comprising the step of treating the protein product with a decolourising agent.

15 19. A process according to any one of claims 13 to 18, wherein the protein component is isolated by filtration or centrifugation.

20 20. A process according to any one of the preceding claims, wherein the chelating agent is selected from the list consisting of: citric acid, citrate, oxalic acid, oxalate, succinic acid, succinate, phosphoric acid, phosphate, lactic acid, lactate, malic acid, malate, maleonic acid, maleonate, tartaric acid, tartrate or any mixture thereof.

21. A process according to any one of the preceding claims, wherein the pH is adjusted by addition of an inorganic acid.

25 22. A process according to any one of the preceding claims, wherein the chelating agent is added to the plant material during the disruption step.

23. A process according to any one of the preceding claims, further comprising removing the chelating agent from the plant material.

24. A process according to any one of the preceding claims, wherein the plant material is derived from potatoes.

30 25. A product obtainable in a process according to any one of claims 2 to 4, which product is a neutral protein, an alkaline protein, and/or a neutral and/or cationic non-proteinaceous compound.

26. A product according to claim 25, which product is a glycoal-
kaloid, a native protein, or an alkaline protein or an alkaline peptide.

27. A product obtainable in a process according to any one of claims 5 to 9, which product is a soluble plant fibre.

28. A product according to claim 27, which product is a pectin or a hemicellulose.

5 29. A product obtainable in a process according to any one of claims 10 to 12, which product is an insoluble plant fibre.

30. A product obtainable in a process according to any one of claims 10 or 11, which product is a lignin enriched plant fibre.

10 31. A product obtainable in a process according to any one of claims 10 or 12, which product is a cellulose enriched plant fibre.

32. A product obtainable in a process according to any one of claims 13 to 19, which product is patatin.

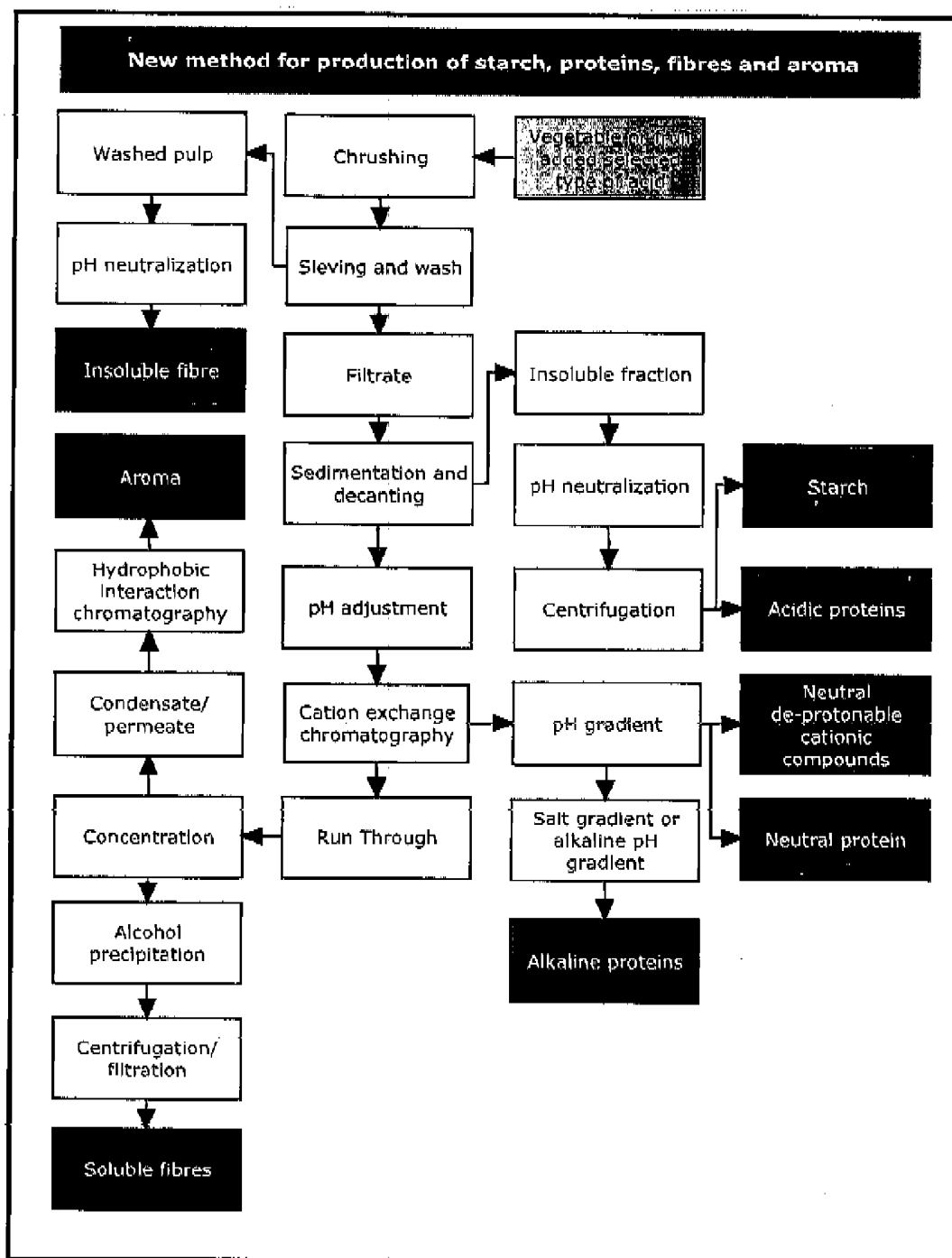


Fig. 1

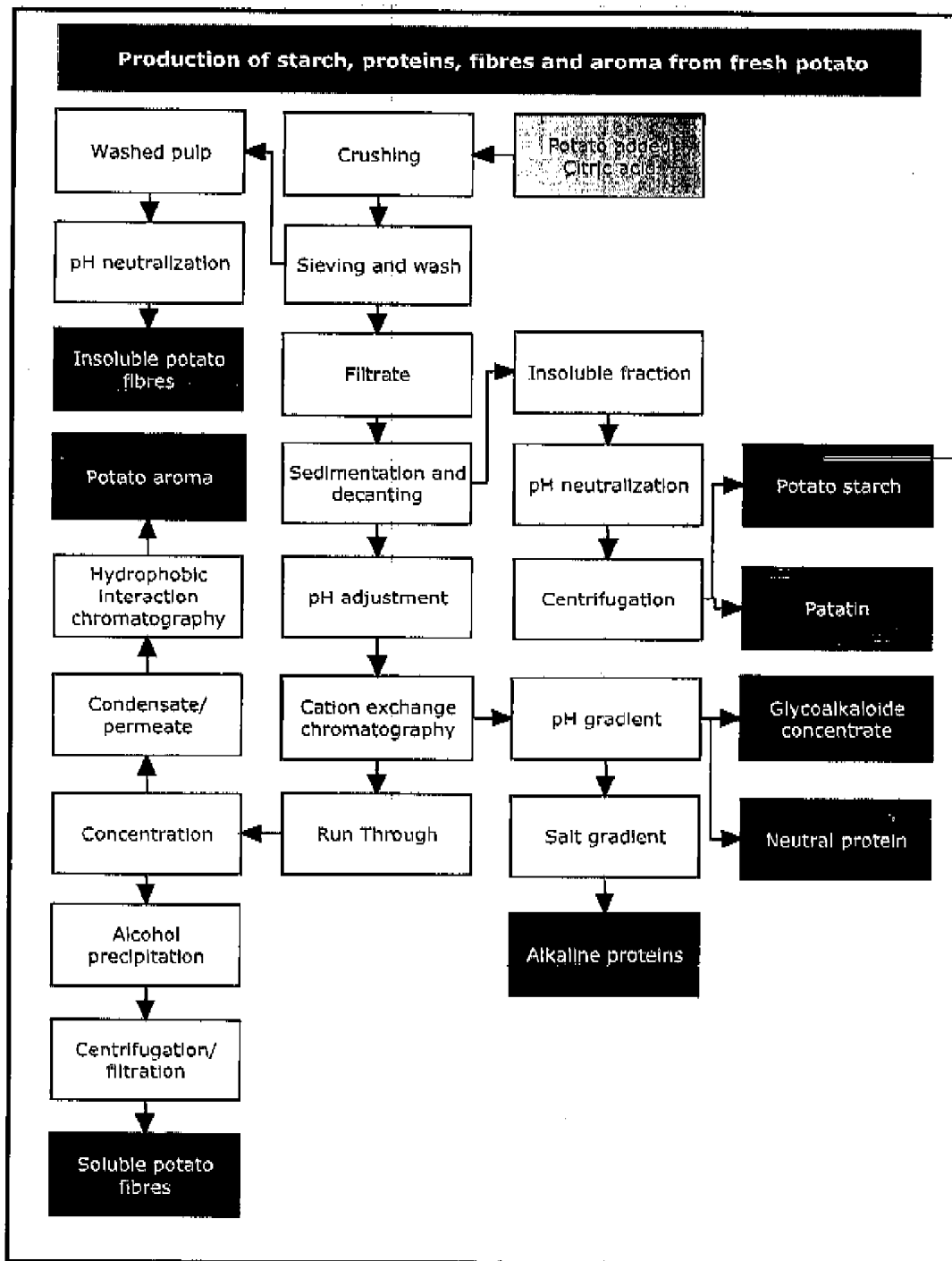


Fig. 2

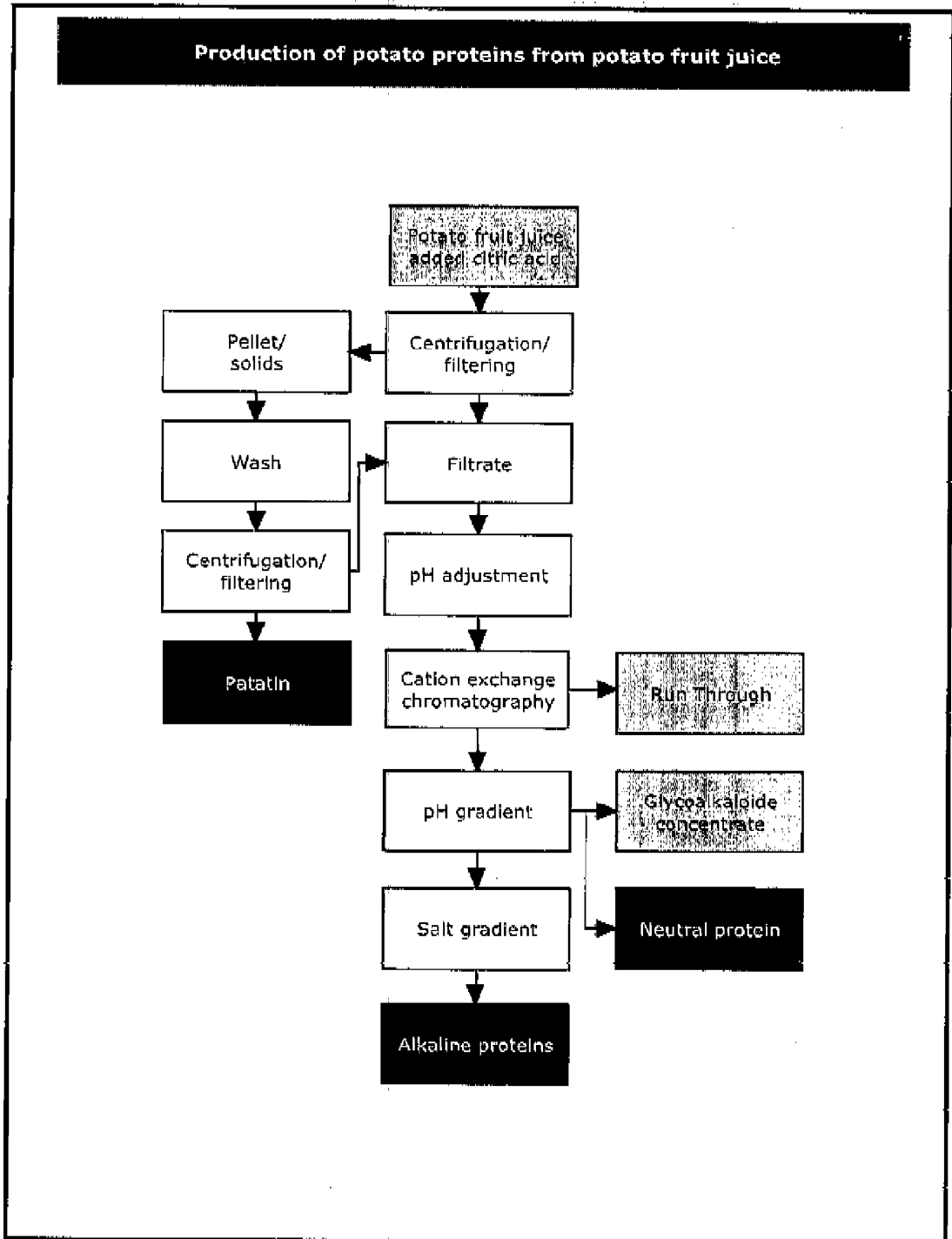


Fig. 3

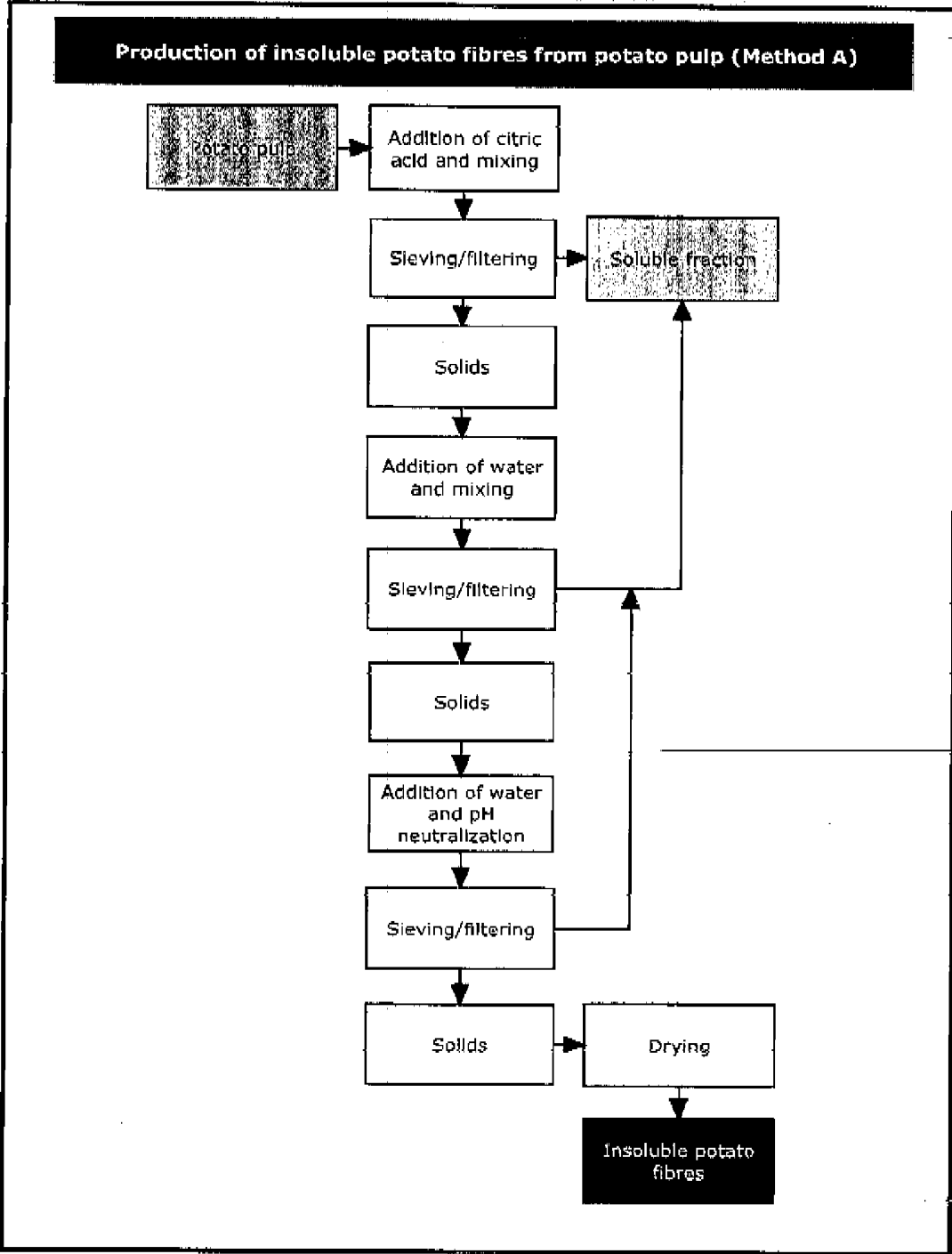


Fig. 4

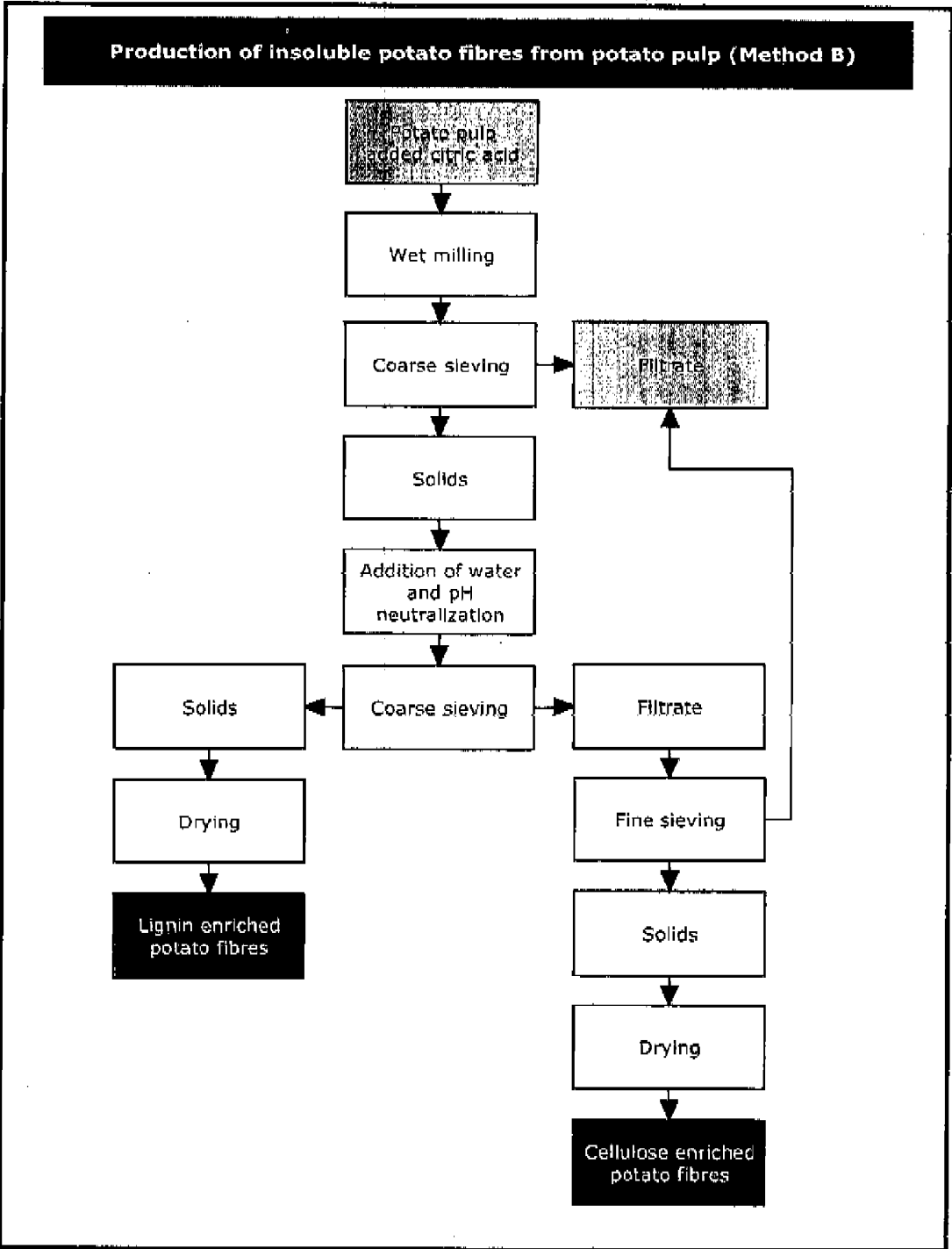


Fig. 5

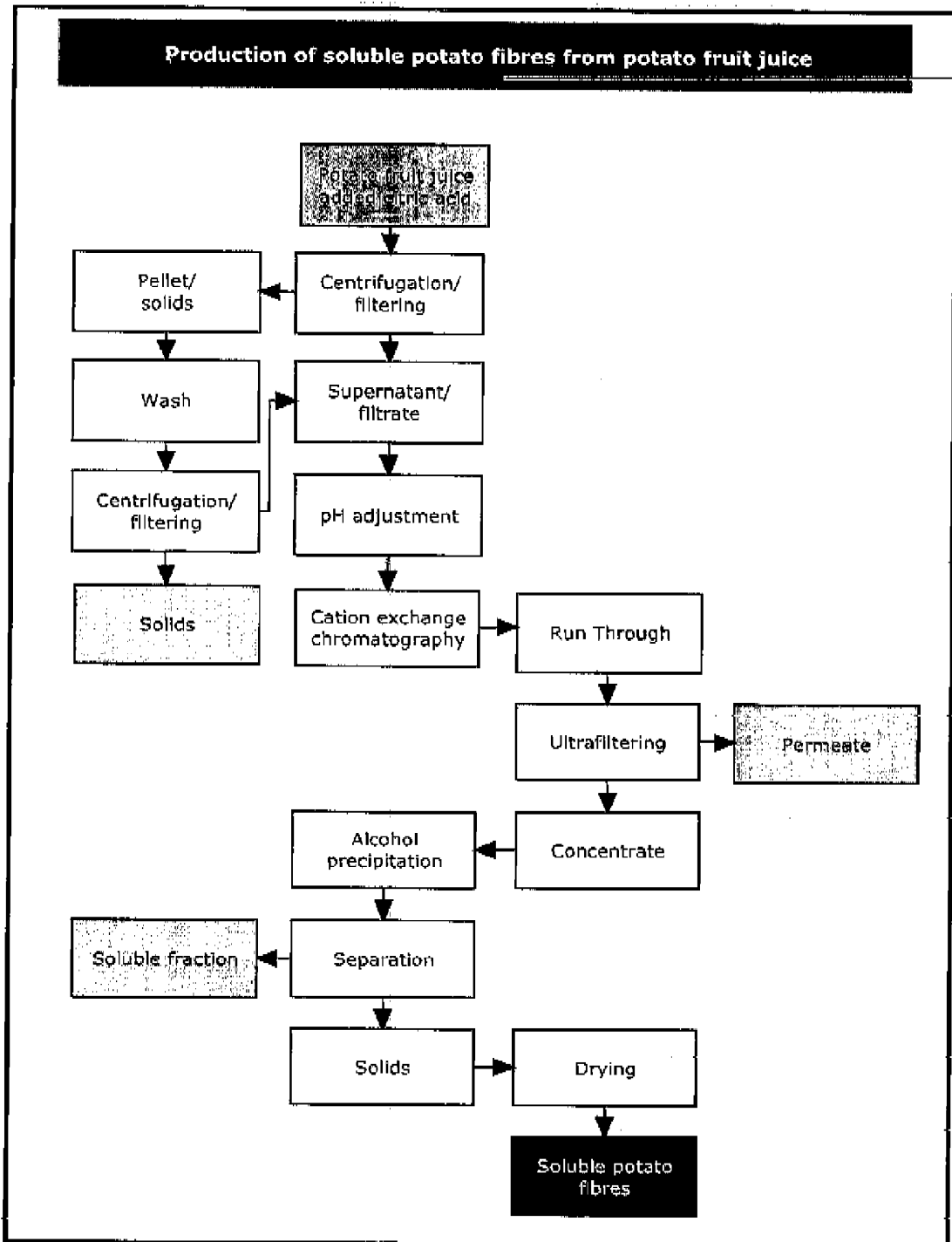


Fig. 6

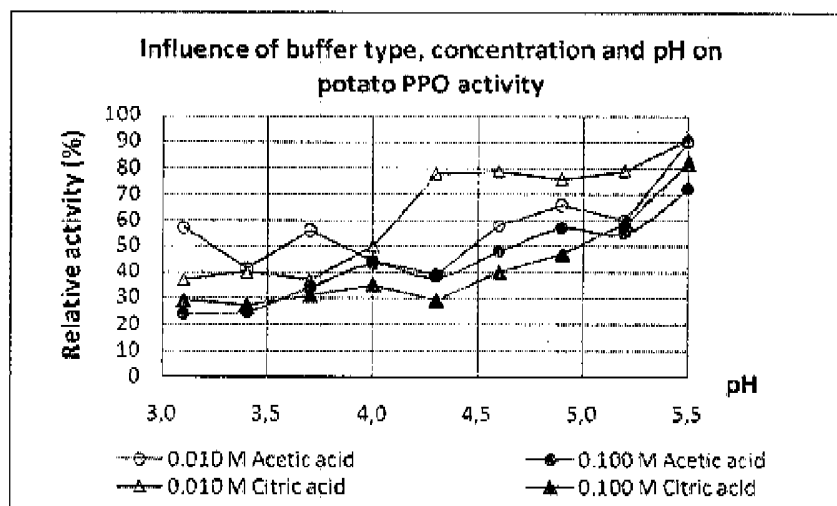


Fig. 7

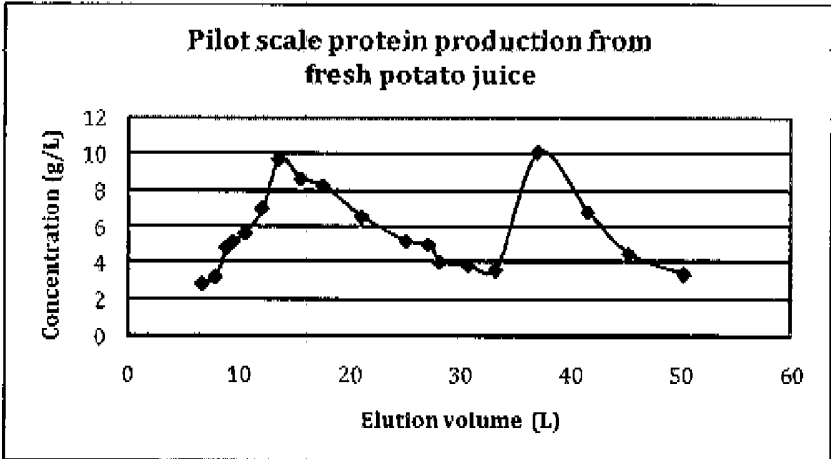


Fig. 8