WHAT IS CLAIMED IS:

1. A process for producing an extract comprising a di-carboxylic acid or salt thereof, the process comprising:

contacting a separation media in a separation zone with a feed mixture comprising the di-carboxylic acid or salt thereof and a second component comprising a mono-carboxylic acid and/or a sugar, wherein at least a portion of the di-carboxylic acid or salt thereof and the second component are retained on the separation media;

eluting at least a portion of the second component from the separation media with an eluent to form a raffinate comprising the second component;

removing the raffinate from the separation zone; and

eluting the di-carboxylic acid or salt thereof from the separation media with the eluent to form the extract comprising the di-carboxylic acid or salt thereof, wherein the extract comprises at least about 50 wt. % of the di-carboxylic acid content of the feed mixture,

wherein the separation media comprises a di-carboxylate form of an anion exchange chromatography resin, and

wherein the eluent comprises water and the extraneous acid concentration of the eluent, prior to contact with the separation media, is less than about 0.5 wt. %.

2. The process of claim 1 wherein the di-carboxylate form of the anion exchange chromatography resin comprises an aldarate form of the anion exchange chromatography resin.

3. The process of claim 1 wherein the di-carboxylate form of the anion exchange chromatography resin comprises a form selected from the group consisting of oxalate, tartronate, malonate, tartrate, succinate, xylarate, arabinarate, ribarate, glutarate, glucarate, adipate, and mixtures thereof.

4. The process of claim 1 wherein the di-carboxylate form of the anion exchange chromatography resin comprises the glucarate form.

5. The process of claim 1 wherein the feed mixture comprising the di-carboxylic acid is used to condition the anion exchange chromatography resin.

6. The process of claim 1 wherein the anion exchange chromatography resin comprises a weakly basic anion exchange chromatography resin.

7. The process of claim 1 wherein the extract comprises at least about 60 wt. % of the di-carboxylic acid content of the feed mixture.

8. The process of claim 1 wherein the extract comprises from about 55 wt. % to 99 wt.% of the di-carboxylic acid content of the feed mixture.

9. The process of claim 1 wherein the raffinate comprises at least about 60 wt. % of the second component content of the feed mixture.

10. The process of claim 1 wherein the raffinate comprises from about 60 wt. % to about 95 wt. % of the second component content of the feed mixture.

11. The process of claim 1 wherein the feed mixture comprises dissolved solids and the di-carboxylic acid concentration in the feed mixture is at least about 20 wt. % of the dissolved solids content.

12. The process of claim 1 wherein the feed mixture comprises dissolved solids and the di-carboxylic acid concentration in the feed mixture is from about 20 wt. % to about 70 wt. % of the dissolved solids content.

13. The process of claim 1 wherein the feed mixture comprises dissolved solids and the second component concentration in the feed mixture is from about 10 wt. % to about 80 wt. % of the dissolved solids content.

14. The process of claim 1 wherein the second component comprises a C_1 to C_6 mono-carboxylic acid.

15. The process of claim 14 wherein the second component comprises a C_6 mono-carboxylic acid selected from the group consisting of gluconic acid, guluronic acid, glucuronic acid, and mixtures thereof.

16. The process of claim 1 wherein the second component comprises a sugar selected from the group consisting of a pentose, hexose, and mixtures thereof.

17. The process of claim 1 wherein the di-carboxylic acid comprises a C_2 to C_6 di-carboxylic acid.

18. The process of claim 17 wherein the di-carboxylic acid comprises one or more acids selected from the group consisting of oxalic acid, tartronic acid, malonic acid, tartaric acid, succinic acid, xylaric acid, arabinaric acid, ribaric acid, glutaric acid, glucaric acid, adipic acid and mixtures thereof.

19. The process of claim 17 wherein the di-carboxylic acid comprises glucaric acid.

20. The process of claim 1 wherein the separation zone is a simulated moving bed chromatography stage.

21. The process of claim 1 wherein the feed mixture comprises a dissolved solids content that is at least about 20 wt. %.

22. The process of claim 1 wherein the feed mixture comprises a dissolved solids content that is from about 20 wt. % to about 70 wt. %.

23. The process of claim 19 wherein the second component comprises a mixture comprising gluconic acid, guluronic acid, glucuronic acid, and one or more ketogluconic acids.

24. A process for preparing an aldaric acid, the process comprising:

oxidizing an aldose with oxygen in the presence of an oxidation catalyst in an oxidation reaction zone to form an oxidation product comprising the aldaric acid and on-path intermediates to the aldaric acid;

removing the oxidation product from the presence of the oxidation catalyst; and

producing an extract comprising the aldaric acid in according to the process of claim 1, wherein the feed mixture comprises the aldaric acid as the di-carboxylic acid and on-path intermediates to the aldaric acid as the second component obtained from the oxidation

product.

25. The process of claim 24, further comprising recycling the on-path intermediates to the oxidation reaction zone.

26. A process for producing an extract comprising a di-carboxylic acid or salt thereof, the process comprising:

contacting a separation media in a separation zone with a feed mixture comprising the di-carboxylic acid or salt thereof and a second component, wherein at least a portion of the di-carboxylic acid or salt thereof and the second component are retained on the separation media;

eluting at least a portion of the second component from the separation media with an eluent to form a raffinate comprising the second component;

removing the raffinate from the separation zone; and

eluting the di-carboxylic acid or salt thereof from the separation media with the eluent to form the extract comprising the di-carboxylic acid or salt thereof, wherein the extract comprises at least about 50 wt. % of the di-carboxylic acid content of the feed mixture, and

wherein the eluent comprises water and the extraneous acid concentration of the eluent, prior to contact with the separation media, is less than about 0.5 wt. %, and

wherein the di-carboxylic acid comprises a C_5 and/or C_6 di-carboxylic acid and the second component comprises a mono-carboxylic acid.

27. A process for preparing glucaric acid, the process comprising:

reacting glucose with oxygen in the presence of an oxidation catalyst in an oxidation reaction zone to form an oxidation product comprising glucaric acid and on-path intermediates to glucaric acid;

removing the oxidation product from the presence of the oxidation catalyst at a reaction endpoint wherein the molar yield of glucaric acid and lactones thereof at the reaction endpoint does not exceed about 60% and the on-path percentage at the reaction endpoint, which is the sum of (a) the molar yields of glucaric acid, gluconic acid, guluronic acid, and glucuronic acid and (b) the percentage of unconverted glucose, is at least 70%;

separating a glucaric acid product from on-path intermediates and glucaric acid obtained in the oxidation product according to the process of claim 26, wherein the di-

carboxylic acid comprises glucaric acid and the mono-carboxylic acid comprises gluconic acid, guluronic acid, and/or glucuronic acid; and

recycling the on-path intermediates to the oxidation reaction zone.

28. The process of claim 26 wherein the extraneous acid concentration of the eluent, prior to contact with the separation media, is less than about 0.1 wt. %.

29. The process of claim 26 wherein the extraneous acid concentration of the eluent, prior to contact with the separation media, is less than about 0.05 wt. %.

30. The process of claim 26 wherein the extraneous acid concentration of the eluent, prior to contact with the separation media, is less than about 0.01 wt. %.

31. The process of claim 26 wherein the anion exchange chromatography resin comprises a weakly basic anion exchange chromatography resin.

32. The process of claim 26 wherein the extract comprises at least about 60 wt. % of the di-carboxylic acid content of the feed mixture.

33. The process of claim 26 wherein the extract comprises from about 55 wt. % to 99 wt. % of the di-carboxylic acid content of the feed mixture.

34. The process of claim 26 wherein the raffinate comprises at least about 60 wt. % of the second component content of the feed mixture.

35. The process of claim 26 wherein the raffinate comprises from about 60 wt. % to about 95 wt. % of the second component content of the feed mixture.

36. The process of claim 26 wherein the mono-carboxylic acid comprises a C_1 to C_6 mono-carboxylic acid.

37. The process of claim 26 wherein the mono-carboxylic acid comprises a C_6 mono-carboxylic acid selected from the group consisting of gluconic acid, guluronic acid, glucuronic acid, and mixtures thereof.

38. The process of claim 26 wherein the second component further comprises a sugar selected from the group consisting of a pentose, hexose, and mixtures thereof.

39. The process of claim 26 wherein the C_5 and/or C_6 di-carboxylic acid comprises a C_5 and/or C_6 aldaric acid.

40. The process of claim 26 wherein the di-carboxylic acid comprises glucaric acid.

41. The process of claim 26 wherein the second component comprises a mixture comprising gluconic acid, guluronic acid, glucuronic acid, and one or more ketogluconic acids.

42. The process of claim 26 wherein the separation zone is a simulated moving bed chromatography stage.

43. The process of claim 30 wherein the di-carboxylic acid comprises glucaric acid.

44. The process of claim 43 wherein the mono-carboxylic acid comprises a C_6 mono-carboxylic acid selected from the group consisting of gluconic acid, guluronic acid, glucuronic acid, and mixtures thereof.

45. The process of claim 1 wherein the extraneous acid concentration of the eluent, prior to contact with the separation media, is less than about 0.1 wt. %.

46. The process of claim 1 wherein the extraneous acid concentration of the eluent, prior to contact with the separation media, is less than about 0.05 wt. %.

47. The process of claim 1 wherein the extraneous acid concentration of the eluent, prior to contact with the separation media, is less than about 0.01 wt. %.

48. The process of claim 1 further comprising conditioning an anion exchange chromatography resin with a di-carboxylic acid to form the di-carboxylate form of the anion exchange chromatography resin prior to contact with the feed mixture.

49. The process of claim 1 further comprising conditioning an anion exchange chromatography resin in free base or OH^- form with a di-carboxylic acid to form the di-carboxylate form of the anion exchange chromatography resin prior to contact with the feed mixture.

50. The process of claim 48 wherein the resin comprises functional sites and from 90% to 100% of the functional sites are conditioned to the di-carboxylate form.

51. The process of claim 50 wherein the di-carboxylate form of the anion exchange chromatography resin comprises the glucarate form.

52. The process of claim 19 wherein the di-carboxylate form of the anion exchange chromatography resin comprises the glucarate form.