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Pliura et al.

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[54] **DISPLACEMENT CHROMATOGRAPHY PROCESS**

5,340,474 8/1994 Kauvar 210/198.2

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[57] ABSTRACT

[30] **Foreign Application Priority Data**

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[51] **Int. Cl.⁶** **B01D 15/08**

[52] **U.S. Cl.** **210/635; 210/656; 210/198.2; 530/385; 530/413; 530/416; 530/417**

[58] **Field of Search** 210/635, 656, 659, 198.2; 530/385, 413, 416, 417

Hemoglobin is purified from a crude solution thereof, to obtain an aqueous solution containing at least 99% of a preselected hemoglobin species, by a two stage displacement chromatography process. One of the stages is conducted under anionic exchange conditions, and the other under cationic exchange conditions. In both stages, the exchange column is overloaded to displace the hemoglobin species therefrom with contaminants having greater affinity for the column, and using the impure hemoglobin solution as the displacer. Normally, anionic exchange is conducted first, with contaminants more acidic than the hemoglobin displacing the hemoglobin from the column and themselves remaining attached to the column for separation. The cationic exchange process is conducted second, on the eluent from the first column, and in this stage, the more basic contaminants displace the hemoglobin from the column under overload conditions, to yield a substantially pure hemoglobin solution.

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11 Claims, 5 Drawing Sheets

