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Carter et al.

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[54] **OXYGEN-TRANSPORTING ALBUMIN-BASED BLOOD REPLACEMENT COMPOSITION AND BLOOD VOLUME EXPANDER**

5,780,594 7/1998 Carter 530/363

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[57] **ABSTRACT**

A recombinant serum albumin is provided which has been modified in the heme binding region so as to have the ability when bound to heme to be capable of reversibly binding oxygen. The modifications are directed to replacing at least one of several hydrophobic binding residues in the natural heme binding region with a hydrophilic residue such as histidine, or by inserting a histidine into these regions, and the resulting recombinant hemealbumin complex, or hemalbumin, is able to reversibly transport oxygen in a manner not possible using natural albumin. The resulting oxygen-transporting recombinant hemalbumin compositions of the invention can be utilized as safe and effective blood replacement compositions, or in other applications such as preservation of organs for transplantation which presently use serum albumin, and these compositions will be advantageous because they can function both as blood volume expanders and as oxygen transport systems at the same time.

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A61K 38/38

[52] **U.S. Cl.** **435/1.2**; 435/325; 514/12;
530/363; 530/362

[58] **Field of Search** 435/325, 69.1,
435/1.2, 1.1; 530/363, 362; 514/12

[56] **References Cited**

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20 Claims, 8 Drawing Sheets