United States Patent [19]

Chapman

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[54] **BIOCOMPATIBLE SURFACES**

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[30] **Foreign Application Priority Data**

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[51] **Int. Cl.**[3] **C07F 9/02;** A23J 7/00

[52] **U.S. Cl.** **260/403;** 260/945; 204/159.22; 526/277

[58] **Field of Search** 260/403, 945

[56] **References Cited**

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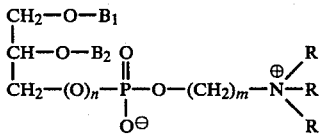
[57] **ABSTRACT**

New phospholipids containing a conjugated di-yne system have the formula:



wherein at least one of B_1 and B_2 is a group of the formula

$$-(CO)_p-X_1-C\equiv C-C\equiv C-Y_1$$

wherein p is 0 or 1, X_1 is a direct bond or a divalent aliphatic or cycloaliphatic group, Y_1 is H or a monovalent aliphatic or cycloaliphatic group, the total number of carbon atoms in X_1 and Y_1 in each of B_1 and/or B_2 being 8 to 26; and the other of B_1 and B_2 is either (a) the same or a different group of the formula:

$$-(CO)_p-X_1-C\equiv C-C\equiv C-Y_1$$

where X_1, Y_1 or p are as defined above;

or (b) is an aliphatic or cycloaliphatic group containing at least 8 carbon atoms; n is 0 or 1, m is 2, 3 or 4 and each R independently represents an alkyl group containing 1 to 4 carbon atoms, and are prepared by esterification and/or etherification of glycerol by conventional techniques. The conjugated di-yne systems can be cross-linked by actinic radiation to give intermolecular and, in certain cases, also intramolecular cross-linking. Thin layers of the phospholipids can be coated onto substrates subsequently to be brought into contact with blood or other body fluids and then cross-linked to give polymer coated surfaces which have a reduced tendency to initiate blood coagulation, for example, compared to untreated surfaces. Artificial lenses for the human eye treated in this way have a reduced tendency to cause endothelial damage. The phospholipids of the invention can also be formed into liposomes and the conjugated di-yne system then cross-linked. Physiologically active materials such as drugs, enzymes or antigens can be incorporated into the liposomes which can then be used as prolonged release formulations.

8 Claims, No Drawings