carbohydrate equivalent per kg body weight. An equal number of polymerized liposomes made of 100% neutral lipids is given at an equal dose (on a per-liposome basis) as vehicle control.

Pulmonary vascular injury induced by hemorrhagic shock is modeled according to protocols similar to those of Kushimoto et al. (Thrombosis Res. 82:97, 1996). Briefly, adult rats are anesthetized with pentobarbital, the right carotid artery is cannulated for monitoring blood pressure, and the left femoral artery is cannulated for sampling blood and administering fluids. Phlebotomy is induced by gradual withdrawal of 25 mL blood/kg over 15 min using a syringe pump. The mean arterial pressure is maintained between ~30–40 mm Hg for 30 min, and then the rats are resuscitated with 75 mL/kg lactated Ringer's solution, infused over 30 min. Physiological body temperature was maintained during this procedure using a heat lamp. Sham animals are cannulated in the same fashion, but no blood is removed. Pulmonary accumulation of leukocytes, measured as myeloperoxidase activity, and pulmonary vascular permeability to bovine serum albumin (BSA) peaks at 6 h. The hemorrhagic shock is reversible, because animals surviving the first 6 h and allowed to recover survive for at least another 5 days.

The therapeutic compound is tested by administering boluses of test compound through the femoral artery cannula at regular intervals through the critical period (0, 2, and 4 h following fluid resuscitation). ^{125}I-BSA is injected 30 min prior to sacrifice at the 6 h point. A midline laparotomy is performed, blood is withdrawn from the abdominal aorta, and the pulmonary vasculature is perfused with saline via right ventricular puncture. Pulmonary vascular permeability is calculated as a ratio cpm in lung versus plasma, and is an indication of pulmonary vascular damage. Lung samples are homogenized and assayed for myeloperoxidase activity according to Warren et al. (J. Clin. Invest. 84:1873, 1989), as an indication of the number of neutrophils in the lung. Reduction of myeloperoxidase activity and/or permeability by the test composition compared with vehicle control is an indication of efficacy.

In the cited study, hemorrhagic animals responded to 1 mg/kg of the monoclonal antibody PB 1.3. In the present experiment, polymerized liposomes are tested in a range of about 10–400 Tg of carbohydrate equivalent per kg body weight per administration.

Tumor metastasis is modeled according to protocols similar to those described in PCT application WO 96/34609. This model is based on the highly metastatic BL6 clone of the B16 melanoma cell line (Dr. Jean Starkey, Montana Stane U., Bozeman Mont.), or a similar line established and cloned by standard techniques from an excised melanoma or carcinoma. A suspension of metastatic cells is suspended and incubated for 5–10 min at 37° C. with the therapeutic test compound at various concentrations, or a vehicle control. Following incubation, about 2–5×10^4 cells in a volume of 200 TL are injected into the tail vein of 8 week old syngeneic mice. After about 3 weeks, the animals are sacrificed. Lung and liver are excised and fixed in 10% formaldehyde, and tumor cell colonies are counted under a dissecting microscope. Colonies with a diameter >1 mm are counted separately from smaller colonies. A positive result is indicated by a substantial reduction in the total number of colonies or in the proportion of larger colonies. Polymerized liposome preparations are tested in a range of 5 nM–10 TM final concentration of carbohydrate equivalent in the cell incubation mixture.

Allergic asthma is modeled according to protocols similar to those described in PCT application WO 96/35418. Briefly, adult sheep are selected on the basis of having an established early and late bronchial response to inhaled *Ascaris suum* antigen. Animals are restrained, and the nasal passages are topically anesthetized with lidocane. The animals are intubated with a cuffed endotracheal tube through the opposite nostril with a flexible fiber optic bronchoscope as guide. Pleural pressure is estimated with an esophageal balloon catheter. Lateral pressure is measured with a sidehole catheter (i.d. 2.5 mm) advanced through and positioned distal to the tip of the endotracheal tube. The tracheal and pleural pressure catheters are connected to a differential pressure transducer for measuring transpulmonary pressure. Airflow is measured by connecting the proximal end of the endotracheal tube to a pneumotachograph. Pulmonary flow resistance is calculated as the change in transpulmonary pressure divided by the change in flow at mid-tidal volume, averaged over 5 breaths. Thoracic gas volume is measured in a constant-volume body plethysmograph to obtain specific lung resistance (SR_L).

Aerosols of test therapeutic suspensions are generated using a nebulizer that provides a median aerodynamic diameter of ~3 Tm. The nebulizer is connected to a dosimeter system, consisting of a solenoid valve and a source of compressed air. The solenoid valve is activated for 1 sec at the beginning of the inspiratory cycle of the respirator. Aerosols are delivered at a tidal volume of 500 mL at a rate of 20 breaths per minute. The test therapeutic compound is administered via nebulizer. To assess bronchial responsiveness, cumulative concentration response curves are determined by measuring SR_L immediately after inhalation of buffer, and after each consecutive administration of 10 breaths of increasing concentrations of carbachol, in the range of ~0.25% to ~4% (wt/vol). The test is discontinued when SR_L exceeds 400% of initial value or the maximal dose is reached. Bronchial responsiveness is assessed by determining the point at which SR_L reached 400%. Polymerized liposome preparations are tested in a range of 5 nM–10 TM final concentration of carbohydrate equivalent in the aerosol solution.

Arthritis is modeled according to the collagen type-II induced arthritis model of Zeidler et al. (Autoimmunity 21:245, 1995). Briefly, groups of age-matched DBA/1 mice are immunized intradernally with 100 Tg collagen type II from bovine cartilage, emulsified in complete Freund's adjuvant, followed 18 days later with 50 Tg in incomplete Freund's adjuvant. Test therapeutic compositions are administered weekly from about week 4 to about week 8 following the first collagen injection. The disease is assessed daily by visual signs of erythema, and of swelling of one or more joints. Immunological signs of autoimmunity are monitored by standard immunoassays for serum antibody against collagen type II, collagen type I, and proteoglycans. Reduction in the titers of the autoantibodies, or a delay in the appearance of visual signs of arthritis, are indications of efficacy. Polymerized liposomes are tested in a range of about 10–400 Tg of carbohydrate equivalent per kg body weight. In the present experiment, polymerized liposomes are tested in a range of about 10–400 Tg of carbohydrate equivalent per kg body weight per administration, or an equal number of control liposomes.

Other established animal models are implemented in the testing of polymerized liposomes for the treatment of additional clinical conditions of interest.

What is claimed is:

1. A method for making a lipid sheet for inhibiting selectin-mediated binding, wherein the lipid sheet comprises (i) covalent cross links between lipids; (ii) a selectin-binding