nucleophile/nitric oxide composition has a potent, dose-responsive cardiovascular effect.

The above experiment was repeated with the granular polymer produced in Example III. A similar effect was observed, though it was less potent because this polymer contained fewer NO-releasing $N_2O_2^-$ groups per gram than the polymer of Example II.

FIG. 3 illustrates the time course of vascular relaxation when different doses of the polymer-bound nitric oxide-releasing composition of Example III are first exposed to the aortic ring, causing relaxation, then withdrawn from the organ bath, allowing restriction to occur, then reintroduced into the organ bath, causing the vessel to dilate again. In this experiment, a 16-mg sample of the polymer-bound nitric oxide-releasing composition of Example III was immersed into the buffer bath. After 15% relaxation had been achieved, the sample was removed from the bath. Upon removal of the polymer-bound composition, the degree of relaxation fell to approximately 11% over about 5 min. The sample of the polymer-bound composition was then returned to the bath, and a doubling of the degree of relaxation to about 25% was observed.

This experiment illustrates that the pharmacological effects of the polymer-bound nitric oxide/nucleophile composition of the present invention can be modulated as desired by controlling the extent and duration of contact between the polymer and the cells or tissues of interest. This feature is particularly advantageous, for example, to localize the effects of nitric oxide release to a specific target organ or situs.

We claim:

1. A polymer capable of releasing nitric oxide, said polymer comprising a polymeric backbone, wherein said polymeric backbone is of a polymer selected from the group consisting of a polyolefin, a polyether, a polyester, a polyamide, a polyurethane, a peptide, and a starburst dendrimer, and at least one nitric oxide-releasing $[N_2O_2]$ functional group selected from the group consisting of X-N(O)NO] or N(O)NO-X, wherein X is an organic moiety covalently bonded to said $[N_2O_2]$, and wherein the $[N_2O_2]$ group is covalently bonded in said polymer through said organic moiety X.

2. The polymer of claim **1** wherein the organic moiety X of said functional group is part of the polymer backbone.

3. The polymer of claim **1** wherein the organic moiety X of said functional group is part of a group pendant to said polymer backbone.

4. The polymer of claim **1**, wherein said polymeric backbone is of a polyolefin.

5. The polymer of claim **4** wherein said polyolefin is polystyrene.

6. The polymer of claim **4** wherein said polyolefin is polyethylene.

7. The polymer of claim **4** wherein said polyolefin is polytetrafluoroethylene.

8. The polymer of claim **4** wherein said polyolefin is polyvinylidene difluoride.

9. The polymer of claim **4** wherein said polyolefin is polyvinylchloride.

10. The polymer of claim **4** wherein said polyolefin is polypropylene.

11. The polymer of claim **4**, wherein said polyolefin is polyethyleneimine.

12. The polymer of claim **1** wherein said polymeric backbone is of a polyether.

13. The polymer of claim **1** wherein said polymeric backbone is of a polyester.

14. The polymer of claim **1** wherein said polymeric backbone is of a polyurethane.

15. The polymer of claim **1** wherein said polymeric backbone is of a peptide.

16. The polymer of claim **1** wherein said polymeric backbone is of a starburst dendrimer.

17. The polymer of claim **1** wherein said polymeric backbone is of a polyamide.

18. The polymer of claim **17** wherein said polyamide is nylon.

19. The polymer of claim **1** wherein said organic moiety X of the group X-N(O)NO] is of an amine selected from the group consisting of a primary amine, a secondary amine, a polyamine and derivatives thereof.

20. The polymer of claim **2** wherein said organic moiety X of the group X-N(O)NO] is of an amine selected from the group consisting of a primary amine, a secondary amine, a polyamine and derivatives thereof.

21. The polymer of claim **3** wherein said organic moiety X of the group X-N(O)NO] is of an amine selected from the group consisting of a primary amine, a secondary amine, a polyamine and derivatives thereof.

22. A polymer capable of releasing nitric oxide, said polymer comprising a polymeric backbone of polyethyleneimine and at least one nitric oxide releasing group having the formula $[N2O_2]$ covalently bonded thereto.

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