

TABLE IV-continued

EFFECT OF TETRONIC 704 ON PHENOBARBITAL DETERMINATION		
Phenobarbital (ug/ml)	% Lysis	
	Without	With
5	90	90
10	72	70
20	55	52
40	22	21
80	8	7

As can be seen from these data, the Tetronic 704 surfactant had no effect on the immunoassay reactions or resulting accuracy of the reported ligand concentration at any point over the entire range covered.

Then, a comparison study in which phenobarbital was determined in human serum samples was carried out in the presence and absence of Tetronic 704 surfactant on the RA-1000 system as described above. The correlation coefficient was found to be 0.960 with a slope of 0.96.

Thus, it has been demonstrated that the present invention provides an immunoassay reagent and method which is dose-responsive and provides results which correlate well with the same method in the absence of surfactant.

What is claimed is:

1. A composition suitable for use in an automated analysis system for determining an analyte ligand in a sample, which composition comprises:

- a binding partner for said analyte ligand;
- a detection system which has at least two components;
- a vesicle, which is selectively reupturable or permeable by an external medium surrounding the vesicle, having a vesicle surface-incorporated analyte ligand or analyte ligand analog, and a first component of the detection system contained within the vesicle;
- a substance which modifies vesicle rupturability or permeability of the external medium surrounding the vesicle in response to binding of the surface-incorporated analyte ligand or analyte ligand analog and the binding partner;
- at least one additional component of the detection system which is reactive with the first component of the detection system to produce a detectable response; and
- at least one surfactant which does not modify vesicle rupturability or permeability by the external medium surrounding the vesicle.

2. The composition of claim 1 wherein the vesicle comprises a lipid membrane.

3. The composition of claim 2 wherein the lipid membrane comprises a phospholipid.

4. The composition of claim 2 wherein the lipid membrane incorporates a sterol.

5. The composition of claim 2 wherein the lipid membrane includes an amphiphile to which the analyte ligand or analyte ligand analog is bound.

6. The composition of claim 1 wherein the surfactant is a polyoxyethylene polymer having at least about 23 ethylene oxide monomer units.

7. The composition of claim 6 wherein the surfactant further comprises a C<sub>8</sub>-C<sub>17</sub> hydrophobic group.

8. The composition of claim 7 wherein the surfactant is a polyoxyethylene lauryl ether.

9. The composition of claim 7 wherein the surfactant is a nonyl phenoxy polyethoxyethanol having at least 30 ethylene oxide monomer units.

10. The composition of claim 7 wherein surfactant is an octyl phenoxy polyethoxy ethanol having at least 30 ethylene oxide monomer units.

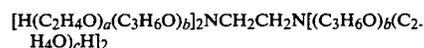
11. The composition of claim 1 wherein the surfactant has the formula:



where b is at least 15 and a plus c is from about 11 to 73.

12. The composition of claim 11 wherein a plus c is selected from 11, 18, 34, 41, 46, 49, 51 and 73.

13. The composition of claim 1 wherein the surfactant has the formula:



where b is at least 5 and a plus c is from about 30 to 113.

14. The composition of claim 13 wherein a plus c is selected from 50 and 75.

15. A composition suitable for use in an automated analysis system for determining the presence of an analyte ligand in a test sample, which composition comprises:

- an antibody to said analyte ligand;
- a liposome containing B-galactosidase, the liposome having analyte ligand or analyte ligand analog bound to its surface;
- complement;
- a substrate capable of interacting with B-galactosidase;
- a substance which provides a detectable response upon the interaction of the B-galactosidase and the substrate; and
- at least one surfactant which does not modify liposome rupturability or permeability by the external medium surrounding the liposome.

16. The composition of claim 15 wherein the surfactant is a polyoxyethylene polymer having at least about 23 ethylene oxide monomer units.

17. The composition of claim 16 wherein the surfactant further comprises a C<sub>8</sub>-C<sub>17</sub> hydrophilic group.

18. The composition of claim 17 wherein the surfactant is a polyoxyethylene lauryl ether.

19. The composition of claim 17 wherein the surfactant is a nonyl phenoxy polyethoxyethanol having at least 30 ethylene oxide monomer units.

20. The composition of claim 17 wherein the surfactant is an octyl phenoxy polyethoxy ethanol having at least 30 ethylene oxide monomer units.

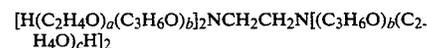
21. The composition of claim 15 wherein the surfactant has the formula:



where b is at least 15 and a plus c is from about 11 to 73.

22. The composition of claim 21 wherein a plus c is selected from 11, 18, 34, 41, 46, 49, 51 and 73.

23. The composition of claim 15 wherein the surfactant has the formula:



where b is at least 5 and a plus c is from about 30 to 113.