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Antibody Affinities in Hapten Specific  
Immunological Tolerance

by

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### Summary

Hapten inhibition of precipitation, was used to determine the relative anti-hapten antibody affinities of both a tolerized and non-tolerized group of adult rabbits. Tolerance was induced by injecting i.v. a total of 100 mg deaggregated sulfanilazo-rabbit gamma globulin (SA<sub>31</sub>-RGG), divided into two equal doses injected 21 and 14 days prior to challenge. Both groups were immunized with 2 mg sulfanilazo-hemocyanin (SA<sub>37</sub>-KLH) emulsified in complete Freund's adjuvant.

Precipitating antibody concentrations were determined by quantitative precipitin assay. The early primary response was refractory to the induction of tolerance. A suppressed response was not apparent until 35 days after immunization. At this time the tolerized group produced about 70% of the antibody in the control group. Up to day 10 the tolerized animals actually produced significantly more antibody than the control group. Data from the hapten inhibition assay indicated that subsequent to day 13, the group of animals receiving the tolerogen had on the average anti-hapten antibody of significantly lower affinity than the non-tolerized group. There was a maturation of antibody affinity in both groups. It was concluded that high affinity antibody producing cells were selectively tolerized. Possible mechanisms to explain this selective tolerance are discussed.

The hapten inhibition assay also was used to determine the ability of a number of different arsanilic acid (AA)-amino acid conjugates to prevent the precipitation of an anti-AA serum with AA-protein. Free arsanilic acid was a relatively poor inhibitor of precipitation.

AA<sub>bis</sub>-lysine and AA<sub>bis</sub>-tyrosine were very good inhibitors. AA<sub>mono</sub>-tyrosine; AA<sub>mono</sub>-histidine and AA<sub>mono</sub>-tryptophan were able to inhibit precipitation to a moderate degree. The conclusions that can be drawn from this data are discussed.

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