Immune response to glutaraldehyde-treated cells. I. Dissociation of immunological memory and antibody production

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Glutaraldehyde (GA)-treated sheep red blood cells (SRBC) or H-2 allogeneic spleen cells (SC), induced immunological memory with absent or markedly reduced primary antibody production. In contrast, a normal secondary response was obtained when GA-SRBC or GA-SC were given to mice primed with the corresponding untreated antigens. The secondary response of mice primed and boosted with GA-treated cells was relatively high with GA-SRBC, and negative or very low with GA-SC. Morphological studies of the fate of intraperitoneally injected cells showed that endocytosed GA-SRBC persisted much longer in peritoneal macrophages than untreated SRBC. Simultaneous challenge of mice with untreated and GA-treated SRBC revealed that phagocytosis and digestion of both types of cells in the same macrophage proceeded independently of each other. The primary response of mice receiving both SRBC and GA-SRBC was entirely similar to the response when SRBC alone was given.