Abstract:

The carboxyl (-COOH) group of heterophile Hanganutziu and Deicher (HD) antigen-active ganglioside (N-glycolylneuraminyllactosyl-ceramide) was esterified (-CO2CH3) by methyl iodide and then reduced to a primary alcohol (-CH2OH) by sodium borohydride. The intact molecule (commonly known as HD3) as well as its two derivatives were tested for HD antigen potency using four human pathologic sera containing HD antibodies. The methyl ester derivative (1-methyl-HD3) gave the same inhibition potency as HD3, but the reduced HD3 gave poor inhibition (1/66) compared to the intact HD3. The results show that reduction of the carboxyl group diminishes the inhibitory potency of HD3. This suggests that although the N-glycolyl (-CH2OH) group of HD3 is the most important determinant for manifestation of HD antigenicity, it is likely that the antibody recognizes both the N-glycolyl and carboxyl groups together when they form a hydrogen bond (-CH2OH———OOC-), aided by their possible proximity, and that substitution of either group therefore reduces the reaction of HD3 with HD antibody dramatically.