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# SYNTHESIS OF PERFLUOROALKYL AND PERFLUOROALKOXY STEROIDS

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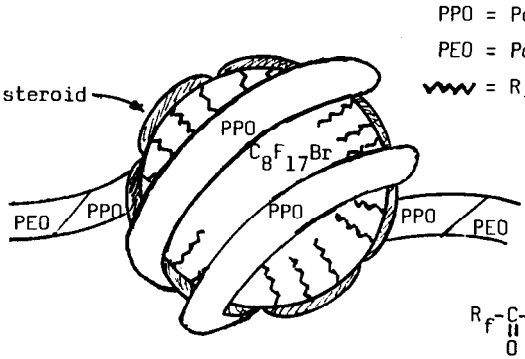
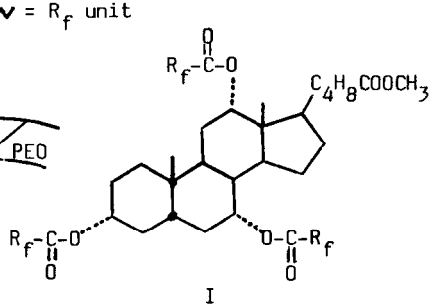
Synthetic methods have been investigated to determine the best way to introduce two or more perfluoroalkyl groups ($R_f$ = $C_6F_{13}$-, $C_8F_{17}$-, or $C_{10}F_{21}$-) on the *alpha*-side of a steroid molecule. Perfluoroalkyl-*alpha*-substituted steroids are desired for testing as coemulsifying agents in fluorocarbon-based blood substitutes (*synthetic blood*). We postulate that a monolayer of perfluoroalkyl-*alpha*-substituted steroid will form around a perfluorocarbon micelle and reduce the interfacial tension between the fluorocarbon and the conventionally-used emulsifying agents (*Pluronic F68* or egg-yolk phospholipid), drawn below for *Pluronic F68*, a block polymer of polyethylene oxide-polypropylene oxide-polyethylene oxide. Perfluoroalkyl steroids were prepared from potassium salts of steroidal alcohols and perfluoroalk-1-enes. A new esterification procedure for perfluoroalkanoic acids was developed to give tri-perfluoroalkanoic acid esters of methyl cholate (I). Combinations of synthetic methods were used to obtain desired compounds. Free-radical addition of 1-iodoperfluoroalkanes to unsaturated steroids was not useful.




1-BROMOPERFLUOROOCTANE MICELLE

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