

## Human High Density Apolipoprotein A-I-Lysolecithin-Lecithin and Sphingomyelin Complexes

### A Method for High Yield Recombinations to Lipoprotein Complexes of Reproducible Stoichiometry

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**Summary:** High density apolipoprotein A-I (apoLp A-I) has been prepared in a chromatographically and immunochemically homogeneous form. This apoprotein forms trimeric and tetrameric aggregates in aqueous solution at higher concentrations. ApoLp A-I has been recombined in almost quantitative yield in the presence of lysolecithin with phosphatidylcholine and sphingomyelin to particles of reproducible stoichiometry. Lysolecithin is not required for the interactions of lecithin and sphingomyelin with the apoprotein A-I or for the stability of these complexes.

Dialysis removes most of the lysolecithin without the loss of lecithin and sphingomyelin.

ApoLp A-I-lecithin particles have a molecular weight of 200000 and contain 50 molecules

lecithin and 25 of lysolecithin. ApoLp A-I-sphingomyelin complexes contain 50 sphingomyelin and 13 lysolecithin molecules. The former particles show up as discs of 100 Å diameter, and the latter particles are 250 Å in diameter. Their thickness was estimated as 25 Å in the apoLp A-I lecithin and 60 Å in the apoLp A-I-sphingomyelin particles.

ApoLp A-I and lysolecithin form complexes whose densities depend on the lysolecithin concentration. Lysolecithin enhances the binding of phosphatidylcholine to apoLp A-I, yielding lipoprotein complexes with decreasing density.

The yield of apoLp A-I-sphingomyelin-lysolecithin complexes is proportional to the lysolecithin concentration. The ratio of apoLp A-I to sphingomyelin in all these complexes remains constant.

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*Komplexe von menschlichem High-Density-Apolipoprotein A-I mit Lysolecithin, Lecithin und Sphingomyelin. Ein Verfahren zur Rekombinierung mit hoher Ausbeute und in reproduzierbaren stöchiometrischen Verhältnissen.*

**Zusammenfassung:** Das High-Density-Apolipoprotein A-I (apoLp A-I) wurde in einheitlicher und immunchemisch reiner Form dargestellt. Dieses „hydrophobe“ Protein neigt in wässriger Lösung dazu, in höherer Konzentration trimerer oder tetramerer Aggregate zu bilden.

Es wurde Apolipoprotein A-I in fast quantitativer Ausbeute in Gegenwart von Lysolecithin alleine und von Lysolecithin mit Phosphatidylcholin und Sphingomyelin in reproduzierbaren stöchiometrischen Verhältnissen rekombiniert.

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*Abbreviations:* PC = phosphatidylcholine = lecithin; SPM = sphingomyelin; lyso-PC = 1-acyl-3-sn-glycerophosphocholine; apoLp A-I = high density apolipoprotein A-I; HDL = high density lipoproteins.