Lipid composition of purified transverse tubule membranes isolated from amphibian skeletal muscle

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The level and proportion of lipids and their fatty acid composition were analyzed in highly purified transverse tubule membranes of amphibian skeletal muscle. Tubule membranes show (a) a higher content of lipids, (b) a higher phospholipid/cholesterol ratio and (c) a different phospholipid composition from other subcellular fractions, such as the light and heavy membranes from sarcoplasmic reticulum, which are similar in lipid profile. Transverse tubule membranes are characterized by a high percentage of phosphatidylserine and sphingomyelin and a low proportion of phosphatidylcholine compared with the other membranes. All three show a high proportion of ethanolamine plasmalogens (50% of the total ethanolamine glycerophospholipid). Transverse tubule membrane lipids contain a high proportion of 20- and 22-carbon polyunsaturated fatty acids, predominantly 20:4, 20:5, 22:5 and 22:6. Arachidonate predominates in phosphatidylinositol, eicosapentaenoate and docosahexaenoate in ethanolamine and