Muscle Specific Fragile X Related Protein 1 Isoforms are Sequestered in the Nucleus of Undifferentiated Myoblast

ABSTRACT

During myogenesis, FXR1P isoforms exhibit a distinct pattern of subcellular partitioning that differs from other families of FMR proteins. As the role of this protein in Fragile X syndrome is still unknown, the model system described here should be viewed as primarily focusing on building models to understand the structure-function relationships among various members of the FARM family.

INTRODUCTION

Atherosclerosis is a prevalent condition that may result in death or disability caused by myocardial infarction or strokes. Although the clinical manifestations of the disease have been established, the mechanism of atherogenesis is still unclear. Recent research suggests that the oxidative modification of LDL (LDL-Ox) is one of its key processes involved. However, the biological effects of LDL-Ox have been largely untested in vivo. Given the potential clinical significance of the oxidative modification of these molecules, many studies have attempted to measure their susceptibility to oxydation in vitro (this measure is believed to correlate with the relative sensitivity of low-density LODl) to oxygen and fatty acids within the arterial wall. Ultracentrifugation, chromatography, electrophoresis, and selective precipitation are among the options for identifying plasmatic LDLs. Lipid peroxidation is a complex process that involves the chain reaction of free radicals with polyunsaturated fatty acids. Rearrangements of double bonds in conjugated dienes, the generation of hydroperoxide, lipid breakdown into lower molecular weight fragments, and chemical changes in the apo B protein are all part of these reactions. The extent of fatty acid peroxidation can be estimated by measuring thiobarbituric reactive substances (TBARS), which is nonspecific but useful in purified systems. TBARS determination is primarily focused on measuring malondialdehyde (MDA) produced by hydroperoxidation of unsaturated fatty acids with three or more double bonds, and has been extensively studied to determine the role of Fe3+, Fe2+ and Cu2 + in the oxidative stress domain of LDL; further reduction of oxygen in biological systems yields hydrogen peroxide and superoxidE radical. The hydroxyl radical, which is the most reactive oxygen species with the shortest half life, is produced by the reaction between these two species. Catalytic amounts of iron or copper salts can accelerate this kinetically slow reaction. The authors present a straightforward technique for assessing the oxidative susceptibility of LDLs in the presence of Cu2+ and H2O2 in vivo by means of TBARS.

CONCLUSION

In summary, our findings highlight the significance of combining functional and structural approaches to understand molecular interactions. The x-ray structure of the MS2 RNA-protein complex shows that certain types of contacts have little or no impact on its stability. Figure 4 demonstrates the significance of our results by schematically illustrating the important interactions at A-4 and A-10 within the structure of the entire translational operator. Val29 and Lys61 have significant stabilizing interactions with both A-3, while Thr45, Ser47 and TH59 have highly asymmetric contributions. The interaction between Thr45 and A-4 is the primary factor that affects binding, while both Ser47 and TF59 only affect A-10.