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Interaction Between Acid-Labile Subunit and Insulin-like Growth Factor Binding Protein 3 Expressed in *Xenopus oocytes*

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The acid-labile subunit (ALS) associates with insulin-like growth factor (IGF)-I or -II and IGF binding protein-3 (IGFBP-3) to form a 150-kD complex in the circulation. This complex is thought to regulate the serum IGFs by restricting them in the vascular system and promotes their endocrine actions. Little is known about how ALS binds to IGFBP3, which connects the IGFs to ALS. *Xenopus oocyte* was utilized to study the function of ALS in assembling IGFs into the ternary complexes. *Xenopus oocyte* was shown to correctly translate in vitro transcribed mRNAs of ALS and IGFBP3. IGFBP3 and ALS mRNAs were injected in mixture and their products were immunoprecipitated by antisera against ALS and IGFBP3. Contrary to the traditional reports that ALS interacts only with IGF-bound IGFBP3, this study shows that ALS is capable of forming a binary complex with IGFBP3 in the absence of IGF. When cross-linked by disuccinimidyl substrate, band representing ALS-IGFBP3 complex was evident on the PAGE. IGFBP3 movement was monitored according to the distribution between the hemispheres. Following a localized translation in the vegetal hemisphere, IGFBP3 was shown to remain in the vegetal half in the presence of ALS. Different from wild type IGFBP3, however, mutant IGFBP3 freely diffused into the animal half despite the presence of ALS. Taken together, this study suggests that ALS may play an important role in sequestering IGFBP3 polypeptides via the intermolecular aggregation. Studies using this heterologous model will lead to a better understanding of the IGFBP3 and ALS assembling into the ternary structure and circulating IGF system.