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The comparison of different gel composition and staining agents for gel electrophoresis of fluorescent protein

Elif Tugce Aksun Tumerkan
University of Exeter, UK

Fluorescent proteins are unique in that they are self-sufficient in forming chromophores with a visible wavelength from 3 amino acids sequence within their own polypeptide structure. The development of Fluorescent Proteins (FPs) and their applications is an outstanding example of basic science leading to practical biotechnological and medical applications. Fluorescent proteins have several applications in science and are used as important indicators in molecular biology and cell-based research, and as effective biosensors. While these proteins occur in numerous marine species, FPs from anthozoans is the best-understood models for experimental cell biology. For clarifying functional properties of fluorescent protein, Sodium Dodecyl Sulfate Polyacrylamide Gel Electrophoresis (SDS-PAGE) analysis is used essentially. In protein- based research, many technique are used for determining functionality of protein, however, SDS-PAGE analysis can only provide a molecular level assessment of the proteolytic fragments. In this study, variations of fluorescent protein band mobility compared based on resolving gel composition and for determination of visualizing of protein band, different staining agents evaluated. For this aim, fluorescent proteins were obtained from the symbiotic sea anemone (*Anemonia viridis*) tentacles and protein bands determined which depend on molecular weight by SDS-PAGE analysis. For SDS-PAGE analysis, protein bands run 3 different composition of resolving gels (7.5, 10 and 12%). After gel electrophoresis process the protein bands are visualized with Coomassie brilliant blue staining and silver nitrate. Then the gels are then de-stained in KCl. The results showed that variations in protein migration with slightly different depend on resolving gel structure. The best mobility property was found in 12% resolving gel. For visualizing, the Coomassie Brilliant Blue was found the best staining agent. Depend on obtained result, it can be pointed out that gel structure and staining procedure have influence on fluorescent protein gel band quality and visibility.

ea386@exeter.ac.uk

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