Development of high-resolution CE-SSCP analysis using PEO-PPO-PEO triblock copolymer matrix

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Electrophoresis-based DNA separation is a widely used method due to its convenience and precision, and furthermore, it is easy to be automized as the various formats from bench-top instrument to lab-on-a-chip. Unlike conventional electrophoretic methods, capillary electrophoresis-single strand conformation polymorphism (CE-SSCP) is capable of simple analysis of DNA sequence variation because the mobility difference comes from conformational difference of single strand DNA. However, CE-SSCP suffers from low resolution; thus its application has been limited in very few cases. A higher-resolution CE-SSCP system was developed with poly(ethyleneoxide)-poly(propyleneoxide)-poly (ethyleneoxide) triblock copolymers (PEO-PPO-PEO). By a series of experiments, a high-resolution CE-SSCP analysis system was demonstrated, and baseline separations between the targets were possible which were overlapped in conventional systems. The results strongly suggest that the PEO-PPO-PEO is an ideal polymer for high resolution analysis.