

# Assembly of Poly(vinyl alcohol) and DNA via Hydrogen Bonds Induced by High Hydrostatic Pressurization

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According to our previous research, it was found that the assemblies of poly(vinyl alcohol) (PVA) and DNA, such as nanoparticles, microparticles and hydrogels, were formed through a high hydrostatic pressure process (10000 atm, 10 min) and could be applicable for gene delivery. In the present study, the PVA-DNA assembly was characterized by various methods, such as agarose gel electrophoresis, melting point and circular dichroism measurements, atomic force microscopy (AFM) observation and nuclease digestion assay. From agarose gel electrophoresis and melting point measurement of the PVA-DNA assembly, it was clarified that the interaction between them was hydrogen bonding. The B-type form of DNA of the PVA-DNA assembly was shown by circular dichroism measurement. The increase in width of DNA in the PVA-DNA assembly was observed by AFM. The increase in nuclease resistance of the PVA-DNA assembly was shown. From these results, it was suggested that the PVA was entwined with the DNA duplex via hydrogen bonds under high hydrostatic pressure.

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