Heterologous Overexpression of Membrane-Anchored Subunit II of Spinach Chloroplast ATP Synthase and Its Detergent-Free Purification as a Soluble Protein*

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Subunit II is one of the four nonidentical subunits of the membrane integral, proton-transporting moiety (CF_o) of the chloroplast ATP synthase. In chloroplasts of spinach leaves, it is the only nuclear-encoded CF_o subunit. It has been deduced that CF_oII is not an additional subunit typical for photosynthetic organisms with no counterpart in *E.coli*, but equivalent to *E. coli* subunit b (Tiburzy, H.-J. and Berzborn, R. J. (1997), Z. Naturforsch. **52c,** 789–798). Heterologous expression of subunit II was achieved by using the bacterial expression vector pT7–7. Recombinant subunit II (II_{rec}) does not integrate into the bacterial membrane nor does it precipitate into inclusion bodies. Gel filtration chromatography indicates that II_{rec} forms higher order aggregates. In three chromatographic steps approx. 10 mg of soluble II_{rec} of electrophoretic homogeneity are obtained from one liter of bacterial culture without using detergents. Thus, a eukaryotic membrane-anchored protein has been overexpressed in *E. coli* and has been purified in a soluble form.

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