percent $\beta$-structure and a 35 percent $\alpha$-helix content should show up in the IR-spectrum.

As scattering effects are probably not the cause for the red shift, an unknown conformation or influences which are due to intermolecular interactions must be considered. The eigendichroism of the lipids adds only very little to the circular dichroism in the far UV and can thus be disregarded.

\begin{itemize}
\end{itemize}

\hspace{1cm} \textbf{p-coumaroyl-meso-tartaric acid from Spinach Chloroplast Preparations}

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In a recent publication\(^1\) we reported on the isolation and identification of flavonoids and cinnamic acid derivatives from spinach chloroplast preparations. These cinnamic acid derivatives and flavonoids are obtained as low molecular fractions I and II from a water extract — called $S_{40, 	ext{wth}}$ — from ether treated lyophylized chloroplasts, which is assumed to contain functional components of the photosynthetic electron transport chain between photosystem I and ferredoxin.\(^2, 3\) We have discussed the possibility that a phenolic compound might be the prosthetic group of this functional component (possibly the primary acceptor) and also the relation of our phenolic compounds to other fractions of various activity isolated from chloroplasts by other authors.\(^4\)

We have shown that the chromophoric group of low molecular fraction I consists of two esters of $p$-coumaric acid.\(^4\) The chemical nature of the compounds esterified to $p$-coumaric acid remained to be elucidated. We wish to report here on their identification.

The $p$-coumaric acid derivatives of low molecular fraction I, absorbing at 312 nm, were obtained from the water extract of ether treated lyophilized chloroplasts as previously described.\(^1\) After alkaline hydrolysis of its chromophore, the resultant alkaline solution was passed through a Dowex 50 WX-8 column and the $p$-coumaric acid extracted with ether.\(^1\) The compound, which was originally esterified to $p$-coumaric acid, could now be found in the water phase. It was identified as $meso$-tartaric acid by paper chromatography (Paper Macherey und Nagel MN 2261 FF: $n$-butanol — formic acid — water $4:1:5$ (by volume, upper phase) $R_f = 0.12$ and $n$-butanol — $2\%$ boric acid — ethyl acetate — formic acid $15:5:5:2$ (by volume) $R_f = 0.10$). $R_f$-values of $dt$-tartaric acid in these solvent systems are 0.19 and 0.15, respectively. Spots were detected by spraying with a 0.04\% solution of bromophenol blue in 95\% ethanol, pH 5).

The identity of the chromophoric group of low molecular fraction I with $p$-coumaroyl-$meso$-tartaric acid

\[
\begin{align*}
\text{COOH} & \\
\text{H} & \text{C} \text{— OH} \\
\text{H} & \text{C} \text{— O} \text{— CO—CH = CH—} \\
& \text{COOH}
\end{align*}
\]

was proved by comparison with a synthetic sample. Synthetic $p$-coumaroyl-$meso$-tartaric acid was obtained according to the procedure of TADERA et al.\(^4\). Its spectral and chromatographic data are identical with those we had recently reported on the chromophoric group of low molecular fraction I, for example $\lambda_{\text{max}}$ (methanol) 312 nm, after addition of sodium methylate 358 nm, $R_f$-values in thin layer chromatography on cellulose in solvent systems $n$-butanol — acetic acid — water $4:1:5$ (upper phase), water and $n$-butanol — $2\%$ NH$_3$ $1:1$ (upper phase)\(^1\).

$p$-coumaroyl-$meso$-tartaric acid and its acetyl derivative have been very recently isolated by TADERA et al.\(^4\) from spinach leaves.

From the data Wu et al.\(^6\) published for the chromophoric group ("$P$-compound") of a fluorescent protein from spinach chloroplasts, which stimulates photosynthesis, it seems quite likely that "$P$-compound" is identical with or related to $p$-coumaroyl-$meso$-tartaric acid.

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