Carbon Dioxide Fixation in *Rhodospirillum rubrum*

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Rhodospirillum rubrum is a photosynthetic bacterium which uses simple organic compounds as electron donors in photosynthesis. During the oxidation of these compounds under anaerobic conditions in the light, CO_2 may be fixed in the photosynthetic process, but at the same time CO_2 may be produced as a result of the oxidation of the electron donor. Depending on the state of oxidation of these substrates the net result of these processes may be an uptake or an output of CO_2. In either case, it is impossible to determine by manometric methods alone the actual amounts of CO_2 fixed or produced. An attempt was therefore made to measure the CO_2 fixation by washed suspensions in the presence of various organic compounds as electron donors by means of $^{14}CO_2$.

In the light the endogenous incorporation of isotopic CO_2 proceeds at a fairly high rate and corrections were therefore made for this. With acetate as substrate the amount of $^{14}CO_2$ incorporated was less than in the control without substrate, indicating that acetate inhibits the endogenous fixation of CO_2 (*cf.* Glover and Kamen [1]). Butyrate was the only substrate which caused a $^{14}CO_2$ incorporation equal in amount to the CO_2 fixation as measured manometrically. It seems likely that no CO_2 is produced in the photometabolism of this substrate. The quantity of $^{14}CO_2$ incorporated with propionate was more than twice as great as the net fixation measured manometrically. It is possible that the photometabolism of propionate involves carboxylation to succinate as in the green sulphur bacterium *Chlorobium thiosulphatophilum* [2]. When succinate was the substrate the $^{14}CO_2$ incorporation was the same as expected on theoretical grounds [3]. Malate, fumarate and lactate all gave results higher than expected on the basis of theory. Manometric measurements showed that there was a net output of CO_2 with each of these substrates. A possible explanation of these discrepancies is that certain substrates may stimulate exchange reactions involving CO_2, leading to an incorporation of isotope but without affecting the net fixation of CO_2. In view of the probable occurrence of these reactions methods involving isotopic CO_2 are not suitable for measuring CO_2 fixation in photosynthetic systems of this type.

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Sulfhydryl Groups in Serum Proteins During Influence of Cortisone

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It has previously been shown that cortisone restores the lowered sulfhydryl values in patients with polyarthritis [1]. Several investigations seem to indicate that cortisone when it acts inhibitively on cell activity and protein synthesis does so through the mediation of sulfhydryl dependent systems [2].

These investigations have been continued in experiments *in vitro*. The sulfhydryl determinations are carried out by means of amperometric methods, using a rotating platinum electrode and mercuric acetate as the titrator.

The results so far reached show that cortisone is capable of increasing sulfhydryl values in albumin by 15—20 % depending on incubation conditions.

Work is in progress and a detailed paper is in preparation.

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