(According to the latest information [4], the heat of formation of $MgO \cdot Al_2O_3$ from MgO and Al_2O_3 is < 5 kcal and hence lower than RT in the actual temperature range. An $Al^{3+}-Mg^{2+}$ disorder according to (*b*) should therefore be expected).

The three straight lines drawn in Fig. 1 are calculated from

$$\ln a_{MgO} = \frac{\Delta S_f}{R}\left(1 - \frac{T_f}{T}\right)$$

where the value of ΔS_f, the entropy of fusion, is chosen to be 5, 6.2 and 7 e.u. respectively. The MgO activity calculated with the normal value for alkali-halides, $\Delta S_f = 6.2$ e.u., are in a remarkably good agreement with the disorder model (*b*).

(3) The change in volume on melting of LiF is $\Delta V/V_f = 29.4$ % [5]. If contribution of the Li ions is neglected, the volume change according to the transition

$$LiF_{(NaCl)} \rightarrow LiF\square_{\frac{1}{3}(Spinel)}$$

should be $\Delta V/V_f = 33$ %, which is in astonishingly good agreement with the expansion on melting.

Of course this does not mean that the spinel model, as suggested above, is identical to the real structure of the liquid phase. However, it seems that an improvement in the evalution of the thermodynamic properties is possible if in addition to a Temkin statistical ion distribution one takes into account statistically distributed vacancy positions.

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Reversible Transformation of the Acceptor Specificity of Yeast D-Lactic Cytochrome *c* Reductase

AGNAR P. NYGAARD

Johan Throne Holst's Institute for Nutrition Research, University of Oslo, Blindern, Oslo, Norway

D-Lactic cytochrome *c* reductase (D-LcR), which is highly specific for cytochrome *c* as acceptor [1,2], is inhibited cytochrome *c*-competitively by the polyvalent cation protamine [3]. With increasing concentrations of protamine added to the assay medium, however, D-LcR acquires the ability to reduce ferricyanide. The decrease of the cytochrome *c* reduction and the increase of the ferricyanide reduction is shown in Fig. 1. The maximum rate obtained with ferricyanide as acceptor approximates that obtained with cytochrome *c* as acceptor; 2,6-dichlorophenol indophenol is not reduced.

The positively charged proteins lysozyme and ribonuclease, which likewise inhibit D-LcR in a cytochrome *c*-competitive man-

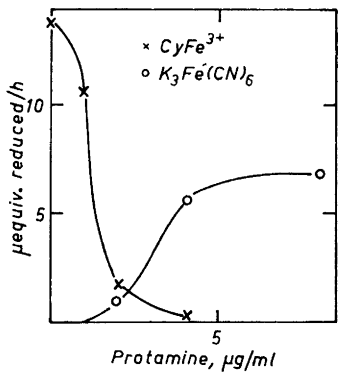

Fig. 1. Change of the acceptor specificity of D-LcR by the addition of protamine sulfate to the assay solution; the rate is expressed as μ-equiv. of acceptor reduced per hour, both when cytochrome *c* and when ferricyanide is used as acceptor. Buffer, sodium phosphate, $\Gamma/20.01$, + 0.001 M Versene; pH 6.8; D-lactate, 5×10^{-3} M; 23°; ×————×, cytochrome *c*, 4×10^{-6} M; o————o, ferricyanide, 1.4×10^{-4} M.

ner, do not form a ferricyanide reductase system with D-LcR.

The inhibition of the D-lactic cytochrome *c* reductase system is counteracted by the polyvalent anions deoxyribonucleic acid and chondroitine sulfate; the recovered D-lactic cytochrome *c* reductase system is inactive in the reduction of ferricyanide. In the absence of protamine these polyvalent anions, too, are acceptor-competitive inhibitors of cytochrome *c* reduction.

The reversible transformation of the D-lactic cytochrome *c* reductase system to a ferricyanide reductase system is interesting in view of the fact that a D-lactic ferricyanide reductase disappears and D-LcR is formed during oxygen induction of anaerobically grown yeast [4]. The D-lactic ferricyanide reductase formed from D-LcR and protamine differs from anaerobic D-lactic dehydrogenase, however. There are differences in the pH optimum, the apparent Michaelis constants for D-lactate and ferricyanide, and the reduction of 2,6-dichlorophenol indophenol; only the latter enzyme reduces this acceptor.

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