required for the appearance of the virus-induced increment. The properties of deoxycytidine kinase in extracts of infected and uninfected cells differed in two respects: (i) the enzyme of infected cells was markedly more heat-stable, particularly in the presence of substrate; (ii) the enzyme of uninfected cells is markedly more sensitive to inhibition by the triphosphates of deoxycytidine and deoxythymidine. Taken together, these results suggest that the increment is in fact due to the synthesis of a new enzyme not present in uninfected cells.

The pool of deoxycytidine nucleotides increases after virus infection in a manner that closely parallels the increase in deoxycytidine kinase. Recent work has shown that, under certain conditions, nucleotides from cellular DNA can be reincorporated into viral DNA (P. A. J. Perera & J. M. Morrison, unpublished work). The significance of these findings will be discussed.

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Evidence for the Role of Terminal Regions of Tropocollagen in Fibrillogenesis: Specific Enzymic Degradation Studies

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The morphology of tropocollagen, precipitated as fibrils, and as the segment-long-spacing form, after digestion with pepsin for various periods, was studied in the electron microscope.

After a short digestion (1–5 h) fibrils with symmetric band patterns of the type reported by Kuhn, Kuhn & Schuppler (1964) were observed in addition to normal polarized fibrils. At 20 h tactoidal structures with both polarized and symmetric band patterns were seen. After prolonged digestion (up to 5 days) most fibrils (95%) were tactoidal with symmetric band pattern.

The segment-long-spacing form from the 20 h digest showed large dimeric tape-like aggregates. From these it could be seen that small sections had been removed from both *N*-terminal (A) and *C*-terminal (B) ends of the molecule (notation of Hodge & Schmitt, 1960).

Since pepsin is thus shown to be involved in two reactions, namely removal of fragments from both the A and B ends of the molecule, it follows that the rates of these two reactions need not be identical. Evidence for different reaction rates can, in fact, be adduced from the change in nature of the fibrillar aggregates with time, formation of symmetric fibrils

occurring more rapidly than tactoidal forms, which only arise after prolonged digestion. Tactoidal aggregates have been reported by Bard & Chapman (1968), who produced evidence for their assembly as a process of random accretion. Conversely, there is strong presumptive evidence for normal fibrillar assembly being under rigid control (J. B. L. Bard & J. Chapman, unpublished work).

Our observations could be explained if the end fragments of the molecule served different roles in fibrillogenesis, a fragment at one end being required for molecular polarization, the other for a bonding specificity related to the formation of normal fibrils.

We therefore treated tropocollagen with carboxypeptidase and leucine aminopeptidase to remove amino acids specifically from each end of the molecule.

Digestion with carboxypeptidase gave rise to polarized tactoids, whereas digestion with leucine aminopeptidase resulted in symmetric limited-diameter fibrils, suggesting that the B end is required for structural specificity whereas the A end is involved in an orientation mechanism.

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The Development of Limit Dextrinase Activity during the Germination of Cereals

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The enzyme limit dextrinase catalyses the hydrolysis of α -(1 $\rightarrow$ 6)-D-glucosidic inter-chain linkages in α -dextrins that are produced by the α -amylolytic breakdown of amylopectin. In previous studies by other workers (e.g. Kneen & Spoerl, 1948; Back, Stark & Scalf, 1948; Greig, 1963) the enzyme has been assayed by measurement of the increase in reducing power or of fermentable sugars that result from enzyme action on α -dextrins. This method of assay is subject to some dubiety if the enzyme preparation also contains α -amylase and α -glucosidases. Manners, Marshall & Yellowlees (1970) have shown that the polysaccharide pullulan is hydrolysed by cereal limit dextrinase preparations, and that this reaction can be used as a method of enzyme assay. We now report the results of such assays of protein preparations extracted from various ungerminated and germinated cereals.

Manners & Marshall (1969) have described the