

https://dspace.org/

Solubility of dentin in phosphate buffers

Solomons, C. C.

1956
http://hdl.handle.net/10539/19675

Downloaded from a DSpace repository. https://dspace.org/

of importance. In HS, activation of the lipoproteins to bind with coconut oil in a suitable substrate for lipoprotein lipase appears to have occurred in vivo, since there is no initial delay in clearing. The lag in clearance induced by PS suggests a competitive binding of fat by lipoproteins unsuitable as substrate. As the clearing reaction proceeds, the increasing rate of clearing may be due either to a conversion of "non-substrate" lipoprotein to "substrate" lipoprotein paralleling the *in vivo* change after heparin, or more likely to an increasing transfer rate of fat from non-substrate to substrate lipoprotein as follows:

(Non-substrate lipoprotein – fat) ⟶ (Substrate lipoprotein fat)

$$\xrightarrow[\text{lipase}]{\text{Lipoprotein}} \text{(Substrate lipoprotein – fatty acid)} + \text{glycerol}$$

REFERENCES

ANFINSEN, C. B., JR. (1954). Symposium on Atherosclerosis, p. 217. Publication 338. National Academy of Sciences (National Research Council, Washington).
KORN, E. D. (1955). *J. Biol. Chem.*, **215**, 1, 15.

SOLUBILITY OF DENTIN IN PHOSPHATE BUFFERS, *by C. C. Solomons* (*Joint Dental Research Unit of the C.S.I.R. and the University of the Witwatersrand, Johannesburg*).

This report describes the rate of dissolution of human dentin in the pH range 5 to 8. The results are compared with those obtained using dentin which was freed of organic material by soxhlet extraction with 85% ethylene diamine at 95° C for 48 hours.

The buffer solutions were prepared by adding 1 N sodium hydroxide to 1 M sodium dihydrogen phosphate containing 10% NaCl until the required pH was obtained.

Weighed samples (100 mg.) of dentin of known moisture content were shaken with 15 ml. of buffer solution for 4 hours. The undissolved dentin was removed by filtration, washed, dried at 110° C overnight and re-weighed. No protein or carbohydrate degradation products were detected in the filtrate. The percentage dissolution of dentin in each buffer was calculated and plotted against the pH value of the buffer.

It was observed that the solubility of the protein-free dentin decreased rapidly with increase in pH value, tending to zero at a pH of 7·2. The percentage dissolution of the untreated dentin initially also fell with increase of pH; however, in the isoelectric range (pH 6 to 7) of dentin collagen [Stack, 1955] the dissolution remained constant, and then dropped sharply at pH values above 7·0.

These findings suggest that the rate of dissolution of the mineral material in dentin is influenced by polar groups in the organic matrix.

REFERENCE

STACK, M. V. (1955). *Ann. N.Y. Acad. Sci.*, 60, 588.