kg/D. There were no regressions among the controls 34 days after implantation. 3. Growth of sarcoma Rl in Wistar rats was retarded about 50% by the product at 3 mg/kg/D. 4. Walker 256 carcinosarcoma was retarded in growth by doses of 1-3 mg/kg/D and inhibited for about 2-3 weeks with a dose of 4.5 mg/kg/D. 5. After initial period of growth inhibition the Walker tumor became resistant to the drug and then grew rapidly in spite of continued therapy.

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Effect of Preweanling Administration of Sucrose on Subsequent Caries.* (22957)

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Sognnaes(1,2) indicated that ingestion of sucrose by dams of rats and monkeys during the calcification of teeth of the young may affect their subsequent caries experience. In another study(3) ashed laboratory chow, fed to pregnant rats, decreased the amount of decay in the offspring. This observation might suggest that the increased caries, using the refined diet alone, was due to lack of some important constituent in the diet. The technic developed by the authors† in which various food components were given directly to the young during the suckling period was very useful in studying the systemic effect of diet in caries. When using this technic various carbohydrates given to the suckling young in doses of approximately 1 to 1000 by body weight produced a marked increase in decay of teeth undergoing calcification. Of the carbohydrates used from the 2nd day following birth to weaning, sucrose produced the most consistent increase in caries. The present study was designed to show the time during suckling period that these changes take place.

Method. Thirty-six new born caries-susceptible rats from 6 litters were divided into 4 equal groups. Twenty percent sucrose solutions were administered orally, using amounts not greater than 1 to 1000 of body weight. One-fourth of this group received drops 3 times a day from the day following birth through the 6th day. One-fourth received drops from the 7th through the 13th day. The next group received drops 3 times a day from 14 through the 21st day. The last 4th received only maternal milk throughout the suckling period. All animals received mothers milk *ad libitum* during the suckling period. When weaned at 21 days of age all animals were placed on the cariogenic diet of the following composition: Casein 24, sucrose 65, salts U.S.P. XIV 4, corn oil 5, dehydrated whole liver 4, vitamin mix(4) 2, choline 0.2 parts.

Animals were sacrificed at the end of 13 weeks and the molars examined by grinding successive planes parallel to the occlusal surface. Individual charts which showed the relationship of the enamel, dentin, and the pulp

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† Reported at Internat. Assn. for Dental Research, 1956 meeting.

TABLE I. Time of Administration of 20% Sucrose and Resulting Caries Score 13 Weeks Later.

Time, days	1st molar	2nd molar	3rd molar	Total	P value compared with control
1 to 6	20.4	13.6	3.7	37.7	<.01
7 to 13	22.7	15.8	3.3	41.8	<.03
14 to 21	23.2	17.7	5.4	46.3	<.02
Control*	11.1	7.1	1.6	19.8	

* Nine animals/group.

of each molar were used to record the carious lesions. These lesions were scored by the method of Shaw(5). Table I shows these results.

Results. The results of this study are in agreement with the previous work in which a marked increase in the decay was found following administration of various carbohydrates by this technic.

In this study over 100% increase in decay of the teeth was found in the 1st, 2nd, and 3rd molars over litter mates which received only maternal milk during the suckling period. There appears to be no significant difference as to which 3rd of the suckling period the sucrose is given. The 1st molar of the albino rat begins to calcify at about birth and erupts at the 19th day. The 2nd molar begins to calcify about the 2nd day following birth and erupts at about the 22nd day. The 3rd molar begins to calcify about the 15th day and erupts at about the 35th day following birth(6). The differences in decay in this study between the animals receiving the 20% sucrose solution and those receiving maternal milk only would indicate that these changes occur throughout the period of calcification. When it is considered that the changes were induced by giving the sucrose solution for only 7 days, it would appear that these changes are systemic in nature and that they are irreversible. The earlier part of the suckling period has fewer variables and for this reason is being used in further studies of food components and their effect upon the calcifying teeth.

Summary. An effective technic has been found to alter tooth structure which results in an increase in decay of these teeth. This technic specifically separates the systemic from the purely local factors in the development of caries. Twenty % solution of sucrose given orally 3 times a day for at least 7 days during the calcifying period resulted in over 100% increase in decay of teeth of white rats over litter mates not so treated.

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