

mice were sacrificed 20 days after inoculation and only one had splenomegaly. The spleens of these mice were made into 10% suspension and inoculated in 0.2 ml amounts into 30 Swiss and 10 BALB/c mice. They were sacrificed 17 days later and 90% of the Swiss and 70% of the BALB showed splenomegaly. Microscopic examination of the enlarged spleens from both Swiss and BALB/c mice revealed changes identical to those observed by us in Swiss, BALB/c, DBA/2 and C3H mice inoculated with virus previously passed in our laboratory.

Virus could not be isolated from the second ampule after 2 blind passes in BALB/c and Swiss mice.

Summary. The murine host range of Friend leukemia virus has been investigated quanti-

tatively. Virus failed to multiply in C57BL and A strains. About 70% of C3H mice were susceptible, but overt disease developed in only 39%, the remainder being detectable by histologic examination only. Virus multiplied more slowly and to a lesser degree in C3H mice than in Swiss, DBA/2 and BALB/c, which were highly susceptible. Splenomegaly was more marked and more regular in BALB/c than in any of the other strains investigated; 100% of these mice being susceptible after initial adaptation.

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A Shortened Dental Caries Assay with the Cotton Rat.* (27082)

JAMES J. VOGEL AND PAUL H. PHILLIPS

Department of Biochemistry, University of Wisconsin, Madison

One of the handicaps of dental caries research has been the lack of adequate means of evaluation of the process. Use of experimental animals in which actual initiation and progression of carious lesions are studied has been most helpful. Shaw *et al.* (1) devised an assay using the cotton rat. This animal has been used almost exclusively in this laboratory and has provided much data on dental caries in relation to the diet. However, for rapid progress required in the isolation studies, it was tedious and time-consuming. Shaw (2) has emphasized the importance of heredity in dental caries susceptibility. Constance *et al.* (3) found that withholding the feeding of a cariogenic diet until the teeth of the cotton rats were more mature, decreased their susceptibility to the caries process. Taketa *et al.* (4) demonstrated that the influence of the maternal diet was far less important than that of the

diet fed the young cotton rat. With these observations at hand, it seemed that the calcification process was the fundamental point involved, that the early transfer of suckling young from mother to a cariogenic diet would enable us to reduce the time factor involved in the cotton rat assay method, and provide information less subject to individual variation caused by hereditary or other factors.

Experimental. Cotton rats, 16-19 days old were housed individually in wire mesh cages and given feed and distilled water *ad libitum*. The length of the experimental period was either 10, 30 days or 12 weeks. For the 10 and 30 day assay, animals were weighed only at the end of the experimental period and for the 12 week assay, they were weighed weekly. The animals were sacrificed and their teeth evaluated for caries according to the method of Shaw *et al.* For the purpose comparing the assay period, the 802 cariogenic diet and the 802 + 25% oat hulls non-cariogenic were used.

Results. A 10-day assay period was insufficient to develop and demonstrate carious le-

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sions. At the end of 30 days, the carious lesions were sufficiently evident to allow evaluation. It is evident from the data presented in Table I that there was a marked difference in inci-

TABLE I. Comparison of 12 week and 30 day assays of a cariogenic and a noncariogenic diet.*

Assay	Diet	No. of animals	Caries score	
			Incidence	Extent
12 wk	802	37	22	46+
	802 plus 25% oat hulls	36	10	13+
30 day	802	39	20	25+
	802 plus 25% oat hulls	23	6	7+

* 802 was considered the cariogenic diet and 802 plus 25% oat hulls the noncariogenic diet.

dence score between the teeth of the rats fed the cariogenic diet 802 and those fed 802 with added oat hulls. The caries incidence for the 30 day period was equal to that of the rats assayed at 12 weeks. The extent, or enlargement of the lesions was reduced with the use of the 30 day assay. It was observed that the initial age of transfer to the experimental diet was the most critical factor involved (Table II). It was necessary to confine the initial age

TABLE II. Effect of initial age of cotton rats upon caries production at the end of 30 days.

Initial age days	Caries score for 802 diet	
	Incidence	Extent
16-17	20	25+
18-19	13	17+

of the young rats to 16 and 17 days of age in order to obtain consistent and reliable results with the 30 day assay. One difficulty was encountered in that a 16 day old rat may not acclimate himself to the experimental regimen and refuse to eat. If such an animal persists in feed refusal, it should be replaced. Growth rate during an experiment is most important. Animals that fail to grow should be eliminated from the assay.

Summary. A 30 day cotton rat assay was developed which gave results comparable to those obtained with rats assayed at 12 weeks. Age and growth rates were found to be factors which greatly affect the assay. Age and maturation of the tooth account for much of the biological variation encountered in experimental dental caries production and assay.

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