THE EFFECT OF BATYL AND SELACHYL ALCOHOLS ON THE GROWTH OF MALIGNANT TUMORS IN RATS

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E. A. Abaturova and A. V. Shubina

Radiology Department (Head, Professor A. V. Kozlova) and Laboratory for the Estimation of Radioactive substances (Head, Professor V. V. Alpatov), Scientific Reasearch Institute of Roentgenology and Radiology (Director, Professor I. G. Lagunova), RSFSR Ministry of Health
(Presented by Active Member AMN SSSR L. M. Shabad)
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We have investigated the influence of batyl and selachyl alcohols on the development of mucinous carcinoma RS-1.

Batyl alcohol (batylol), the α-octodecyl ester of glycerol, and its analogue selachyl alcohol (selachylol) were synthesized in the USSR in the laboratory directed by Professor M. N. Shchukina (All-Union Chemicopharmaceutical Research Institute).

METHOD

The experiments were carried out on 37 white rats weighing 135-160 g which received suspension in physiological saline of cells of mucinous carcinoma RS-1 subcutaneously into the left hypochondrium. The animals were then divided into three groups (the rats of each group had the same weight). Group 1 were given selachyl alcohol daily for one month after the injection, group 2 received batyl alcohol; group 3 was the control group. The amount given was 1 mg per six rats; the substance was dissolved in 1 ml of sunflower oil. The control rats received only 1 ml of sunflower oil. The animals were observed for more than three months.

RESULTS

By the 7-8th day, at the site of the injection of the carcinomatous cells, a thickening developed beneath the skin, and by the fourteenth day the area of the tumor in all the rats varied between 80 to 160 mm^2. Gradually the tumor increased growing to the size of a pea, then of an egg, and after more than one month it could no longer be measured, because it was as large as the rat itself. By this time the weight of the rat had fallen greatly, but appetite and mobility remained normal. The tumor took the form of a large sac hanging down on one side; sometimes it became covered with necrotic abscesses. As a measurement of such large tumors we used a scale of 5; 1) small tumor (60-80 g); 2) large tumor without necrosis weighing 80-100 g; 3) large tumor with necrosis; 4) very large tumor (more than 100 g), no necrosis; 5) very large tumor with necrosis. After death the tumors were removed and weighed. The rats were weighed before the tumor had reached a size of 100-180 mm^2 (before the fourteenth day after grafting).

The rats which received selachyl alcohol usually put on less weight than did the remainder (see table). For the first two weeks the size of the tumors were approximately the same in all groups, but by the twenty-first day there were considerable differences between the control and experimental groups.

In rats which had received selachyl alcohol and batyl alcohol the mean areas of the tumors were 30% and 17% respectively less than in the controls. These differences were statistically significant. After 31 days the difference in the tumor dimensions were somewhat reduced, being 19% and 11% respectively less than in the control groups. Subsequently these differences almost disappeared, but nevertheless by the 50-55th day the tumor size in the controls was 4.4, and in the experimental groups 3.6 on the scale from 1 to 5. Differences were found in other indices measured. The control rats began to die on the 32nd day, those receiving selachyl alcohol on the 41st day, and those treated with batyl alcohol on the 43rd day. The mean life spans also differed. The life span of the treated rats was

Weight, Tumor Dimensions and Life Span of Rats Treated with Selachyl Alcohol and Batyl Alcohol (mean values).

Conditions of experiment	Change in body weight (as percentage of original weight)		Dimensions and area of tumors											Life span (in days)
			14th day			21st day				31st day				
						A								
	9th day	14th day	A	m	l	mm^2	d	Sd	t	m	l	A		
Selachyl alcohol	+2	+11	115	20	34	690	300	89	3.37	35	54	1860	49.5	
Batyl alcohol	+6	+16	144	23	36	820	170	60	2.83	35	59	2070	50.2	
Control	+6	+16	125	25	40	990				39	59	2320	40.2	

Note: A) area (in mm^2); m) diameter (in mm); l) length (in mm).

24-25% longer than that of the controls. Their viability was also greater. However, after two or three months this difference was gradually reduced, and after three months all the rats died. Of the rats that succumbed, the control rats weighed 15-25% more than did the experimental groups.

Thus both preparations, particularly selachyl alcohol, suppress the development of the mucinous carcinoma RS-1. It must be remembered that rats received these preparations for one month only, and this circumstance probably explains the gradual reduction in the different rates of development of the tumors and the different viabilities of the control and treated groups.