Table 1. TOXICITIES OF VARIOUS CARDIAC GLYCOSIDES

		16-Acetyl digitalinum verum (mgm./kgm.)	Digitalinum verum (mgm./kgm.)	*k*-Strophanthin (mgm./kgm.)
LD_{50} in frogs		0·49 (25)	1·38 (25)	0·44 (25)
MLD in cats		0·43 (3)	1·61 (4)	0·17 (2)
MLD in guinea pigs	Intervals of injection (min.)			
	5	0·90 (3)	16·1 (3)	0·53 (5)
	10	1·47 (3)	22·3 (3)	0·52 (5)
	20	2·50 (3)	40·0 (3)	0·29 (5)

Number of animals used in brackets.

were so measured that about one tenth of minimal doses, which had killed animals intravenously in preliminary experiments, was injected intravenously every 5 min. until death occurred. As shown in Table 1, 16-acetyl digitalinum verum seemed to be weaker than *k*-strophanthin but much stronger than digitalinum verum. Moreover, in guinea pigs, minimal lethal doses were measured using the same procedure as before except that injections were given every 10 or 20 min. As shown in Table 1, for 16-acetyl digitalinum verum and digitalinum verum, doses in cases of 10 or 20 min. were required much more so than those of every 5 min.; however, for *k*-strophanthin, the dose in the case of every 10-min. injection was almost the same as that of every 5 min. and more than that of every 20 min. Therefore, 16-acetyl digitalinum verum and digitalinum verum seemed to be more speedy than *k*-strophanthin in rates of action and elimination.

It has been reported that some natural glycosides which consist of oleandrigenin (16-acetyl gitoxigenin) as aglycone are more potent than their 16-hydroxy glycosides derived by artificial deacetylation. But it is the first time that the acetyl group to 16 hydroxy of gitoxigenin glycoside containing glucose in sugar moiety has been introduced. With the preparation of this substance we felt that we had accomplished our purpose of synthesizing from gitoxigenin glycoside a glycoside with activity stronger than that of the parent compound.

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Changes in Purine Nucleotides of Red Lateral Muscle of Rainbow Trout

IN earlier papers[1,2] we have reported studies on the changes in acid-soluble nucleotides of carp muscle in which they found the accumulation of inosinic acid as a result of slow freezing. Further, the changes of these compounds with time in red lateral and in dorsal muscle of rainbow trout were followed by using ion-exchange chromatography. It was found that the enzyme activities of the former affecting the breakdown of nucleotides are greater than of the latter.

Living fish, scooped with a net, were decapitated, skinned and filleted immediately. The fillets were stored at an ambient temperature of 0° C. for several days. Two gm. of muscle which were immediately desected from the red lateral or dorsal parts of the fillet were ground by hand in a mortar in 20 ml. of 4 per cent cold perchloric acid solution. The extract was filtered and 10 ml. of the filtrate were used for analysis.

Nucleotides and nucleosides were separated by the hydrochloric acid gradient elution system on 'Amberlite *IRA*-400'. The details of the system were described previously[2].

In Table 1 the concentrations of the compounds present after various time-intervals are shown. From these results two characteristics in red lateral muscle, as compared with dorsal one, are noticeable.

The first is the difference in the total amounts of purine compounds, especially those of nucleotides. Value (μ moles/gm. of muscle wet-weight) for the former is smaller than for the latter. This is also supported by other values which in mackerel and in trout muscle are 6·47–7·80 and 4·68 for red lateral, 9·30–10·73 and 7·53 for dorsal muscle (T. Saito, K. Arai, T. Yajima, unpublished work).

Table 1. THE CHANGES OF THE PURINE COMPOUNDS OF RAINBOW TROUT MUSCLE

	Compound found \ Time (hr.) elapsed	0	3	6	24	72
Dorsal muscle	Hypoxanthine			0·14	0·23	0·58
	Inosine	0·00	0·29	0·63	1·02	1·58
	Adrenosine monophosphate	0·42	0·17	0·14	0·17	0·20
	Inosinic acid	3·36	4·23	6·30	6·09	5·42
	Adenosine diphosphate	1·04	1·11	0·30	0·35	0·35
	Adrensine triphosphate	3·53	2·10	0·48	0·17	0·08
	Total	8·35	7·90	7·99	8·03	8·21
Red lateral muscle	Hypoxanthine	0·35	0·17	0·52	0·85	1·25
	Inosine		0·53	1·90	3·11	3·42
	Adrenosine monophosphate	0·12	0·20	0·17	0·12	0·15
	Inosinic acid	1·07	3·21	1·86	1·34	0·62
	Adrenosine diphosphate	0·93	0·44	0·14	0·30	0·30
	Adenosine triphosphate	3·39	1·30	0·00	0·53	0·51
	Total	5·86	5·85	5·85	6·25	6·26

Values are expressed as μ moles/gm. muscle wet-weight

The second is dependent upon the degree of splitting of inosinic acid. In red lateral muscle there is a rapid splitting of inosinic acid as time goes by while in dorsal the same phenomena as in carp muscle (accumulation of inosinic acid) are observed, and, as a result, the amounts of inosine and hypoxanthine in the former increase rapidly.

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PLANT PHYSIOOGY

Plant Growth Activities of 5- and 8-Halogeno-dihydro- and -tetrahydro-1-naphthoic Acids

IT is known that dihydro- and tetrahydro-1-naphthoic acids have high plant growth activities[1]. With the view of testing the effect of substitutions on the activities of these acids, we synthesized chloro- and bromo-derivatives in the 5- and 8-positions of 1,4-dihydro, 3,4-dihydro- and 1,2,3,4-tetrahydro-1-naphthoic acids and tested their activities in the pea straight-growth test[2].