BIOCHEMICAL STUDIES OF *SALMONIDAE*. I.ON THE METABOLIC CHANGES THROUGH THE
EGG AND LARVAL STAGES OF THE SALMON[*ONCORRHYNCHUS KETA* (WALBAUM)]

By

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The samples for this study, the eggs of which had been transported from The Murakami Hatchery, Niigata Prefecture, are cultured in a glass vessel in the laboratory, until they hatched out and absorbed their yolk-sacs. In the course of the culture, the next three samples are taken for the analyses.

1. Eggs are 52 days old, on January 8th.
2. Larvae are just hatched out on the last days of February.
3. Young salmon's entirely absorbed their yolk-sacs.

The results of the analyses of these samples are summarized as follows:—

	Live wt.	Water	Solids	Inorg. matters	Lipins	Proteins P.N × 625	T. N.	Protein N.	Alcohol soluble N.	Alcohol soluble P.
1.	253.50	156.41	97.09	3.11	28.69	74.46	12.97	11.91	1.33	0.34
2.	234.40	141.59	92.81	4.04	23.17	69.58	11.65	11.13	1.32	0.54
3.	319.44	259.04	60.40	5.21	11.34	36.40	6.31	5.83	0.71	—
1.	100.00	61.70	38.30	1.23	11.32	29.37	5.108	4.699	0.53	0.13
2.	100.00	60.40	39.60	1.37	9.89	29.70	4.974	4.749	0.56	0.23
3.	100.00	81.09	18.91	1.63	3.55	11.40	1.975	1.820	0.22	—
1.			100.00	3.20	29.55	76.68	13.36	12.27	1.37	0.35
2.			100.00	4.35	24.97	74.99	12.56	11.99	1.42	0.58
3.			100.00	8.62	18.38	60.27	10.44	9.64	1.22	—

Summary

The eggs (52days old) lose of water and solids until they hatch out, but there are increasion of inorganic matters and alcohol soluble phosphorus (lecithine like substance) and decreasion of proteins and lipins.

Some amounts of these decreased substances come probably from the constituents of the egg's membrance and the substances of its perivitellin space both of which won out from the larva, but the absorption of the mineral matters and the formation of some phospholipins are admitted as noticable phenomena.

In the next time, there is a considerable metabolic change through larval stage. A young salmon just absorbed its yolk-sac gains 85 mg. in weight as the result on absorbing 117 mg. of water and consuming 35 mg. of solids.

At any rate, the growth phenomenon through egg and larval stages are consumption of the greater part of the organic matters in them and the assimilation of some mineral matters and large amount of water from the surrounding medium, because several newly constituents as phospholipins or proteins of muscles and etc., are synthesized from the materials contain originally in this organism.

BIOCHEMICAL STUDIES ON *SALMONIDAE* II.

ON THE DEFECTS OF SILKWORM'S PUPAE AS FOOD OF YOUNG TROUTS (*SALMO IRIDEUS*.)

By

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This paper reports the study on the nutritive value of silkworm's pupae which utilized largely as food for feeding fishes in this country.

The feeding experiments were carried out for 63 days, from July 28 th., to September 28 th., 1927, at The Fish Culture Station by the Lake of Kizaki, Nagano Prefecture.

The experimental animals—young rainbow trouts 180mg. in weight—were divided into 3 groups each of which has 300 fishes. The first group were fed on a basal ration which consisted principally powdered pupa mixing starch of 20%. The second group were supplied the above ration with addition of Osborne's salt mixture and some raw fish, and the diet for the third was that which was added the salt mixture and a small amount of cod liver oil, rice bran and a juice of radish as sources of vitamins A, B and C on the basal one.

The results of the feeding experiments:— All of them are summarized in the Table I and II.