fishes. The first is the poorest in them and its lipins and Mg contents are not increased for 38 days feeding, while the one fed on fresh becomes about 4 times in organic and 7 times in inorganic, and the second group shows the value between them.

4. Comparison of the nutritive values of food for fishes can be decided only in the actual weights in fresh body, and percentageous values of them can not be applied for these purposes because little difference among them are expressed.

Literature.

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BIOCHEMICAL STUDIES ON *SALMONIDAE* IV.

ON AN EFFECT OF THE LIGHT ON THE METABOLISM OF THE FASTING YOUNG SALMON [*ONCORHYNCHUS KETA* (WALBAUM)]

By

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According to the preceeding paper, bodily consumption of young salmon for 38 days fasting is about 10 % in their live weights, solids and lipins are 20 % and 40 % respectively, while inorganic content is doubled, on the contrary, by assimilation from the surrounding medium.

This paper reported the further study was carried out on an effect of the light during fasting.

Salmon's eggs were transported from The Chitosé Hatchery in Hokkaido, and then hatched out in a hatching-box (in the darkness) in our laboratory, some of them, as they entirely absorbed their yolk-sacs, were transported in a glass vessel (in the light) by the window. After 14 days fasting, none of them died in the light as if their appearances were entirely starving whilst the majorities of the other died away in the darkness.

The two samples in light and dark on the end of these experiments were analysed and compared with that of the sample had been taken at just absorbed their yolk-sacs.

TABLE I.

	Stage at yolk-sacs are just absorbed	14 days fasting in the light	14 days fasting in the darkness
Number of fishes	50	30	50
Total live weight	10.8296	5.7018	10.4290
Total solids	2.3593	1.0731	1.7156

Their actual contents and percentageous amounts in the constituents are as follows :—

TABLE II.

	Stage at yolk-sacs are just absorbed			14 days fasting in the light			14 days fasting in the darkness		
Live weight	216.5	100		190.1	100		208.1	100	
Water	169.3	78.21		154.3	81.18		174.3	83.55	
Solids	47.2	21.79	100	35.8	18.82	100	34.3	16.45	100
Inorganic matter	3.10	1.43	6.56	3.04	1.06	8.50	3.36	1.61	9.81
Proteins	34.4	15.88	73.56	25.9	13.63	72.44	24.5	11.73	71.40
Lipins	9.7	4.33	19.88	6.8	3.59	19.06	6.5	3.11	18.89

And, from the above figures, the proportions of the chemical changes through the fasting are calculated as follows :—

TABLE III.

	Initial values	Gains and losses after fasting		Their percentageous values		Percentage of the fi- nishes for the initials	
		in the light	in the darkness	in the light	in the darkness	in the light	in the darkness
Live weight	216.5	-26.4	- 7.9	-14	- 4	86	96
Water	169.3	-15.0	+ 5.0	- 9	+ 2	91	102
Solids	47.2	-11.4	-12.9	-24	-27	76	73
Inorganic matter	3.10	- 0.06	+ 0.29	- 8	+ 8	92	108
Proteins	34.4	- 8.5	- 9.9	-25	-28	75	73
Lipins	9.7	- 2.9	- 3.2	-30	-33	70	67

Proportions of proteins and lipins in the solids consumed are shown in the next table.

TABLE IV.

	In the light		In the darkness	
Solids	11.4	100	12.9	100
Proteins	8.5	74	9.9	75
Lipins	2.9	25	3.2	25

Conclusion.

From the above mentioned results, effects of the light on fasting young salmons at just absorbed their yolk-sacs are as follows:—

1. There occur loss of live weight and consumption of solids (proteins and lipins) in the light and in the darkness, the percentageous values of solids (organic) are less in the light than in the darkness whilst inorganic matter accumulated, on the contrary, in the latter condition.

On fasting, percentageous amount of water increase, but notwithstanding solids decrease. It is very interesting phenomenon that live weights of the fasting fishes in the darkness are heavier than those in the light but solids of the formers less than the latters because the formers absorb some water from the surrounding medium during fasting.

2. Percentageous amounts of proteins and lipins in the solids consumed are the same in the both sides but those to the initial values (before the experiments) are greater in the darkness than in the light.

3. Inorganic contents in percentage increase through the fasting because the consumption of inorganic matter is lower than the others.

This result may be ascertained the result in the preceeding report.

ON THE DETERMINATION AND PREPARATION OF CYSTINE.

By

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Determination

Several years ago, one of the writers established a method of determining cystine in proteins and named it the Iodine method⁽¹⁾. The principle of this method is to decolorize the hydrolysate with animal charcoal and to reduce cystine entirely into cysteine with zinc powder, and then to titrate the colorless solution with a standard iodate solution in the presence of iodide and hydrochloric acid, until the yellow color due to free iodine remains for one