Determination of Cystine in "Shoyu"

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INTRODUCTION.

The amount of cystine in "Shoyu", which was made by a fermenting process like that of "Miso", has been determined in connection with the cystine estimation in "Miso". To this case Dr. Y. Okuda's method⁽¹⁾⁽²⁾ was also applied and the result is given in the following.

EXPERIMENTAL.

For acid hydrolysis, 50 c.c. of "Shoyu" were boiled for 10 hours with 200 c.c. of concentrated hydrochloric acid. This was then filtered, washed with hot water, made up to 250 c.c. To 25 c.c. or 35 c.c. of this hydrolysate, were added 15 c.c. of water, 20 % NaOH, and 10 c.c. of a standard cystine solution. Then the solution was decolorized with 0.5 g of Merck's pure animal charcoal, boiled for one minute, filtered by suction, washed about 5 c.c. of water, and reduced by 0.5 g zinc powder. The filtrate was filled up to 100 c.c. and after confirming the fact that the solution was exactly 2% HCl, to 20 c.c. of the solution was added 5 c.c. of both 5% KI and exactly 4% HCl. The mixture was titrated by M/300 potassium iodate (KIO₃) solution, by shaking continuously, until the yellow color fades in exactly one minute.

Cystine was calculated by the formula; cystine (g) = $0.0098/5.1 \times Q$ at 25. Q indicates the reading. Cystine content of several kinds of "Shoyu" is shown in the following table:

Table I. Cystine mg in 100 c.c. of "Shoyu".

Sample	Estimation by mixing with standard Cystine solution	Estimation applied only to the acid hydrolysate
A	42.4	38.5
B	54.4	46.2
C	48.3	42.1
D	49.2	42.2

SUMMARY.

The cystine content in 100 c.c. of "Shoyu" was 42.4~54.4 mg by Y. Okuda's method.

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