ϵ : Extinction coefficient (measured by Natting's spectrophotometer)

ϵ_{∞} : Extinction coefficient at infinite time.

$$\beta = -\frac{1000}{n}, \quad n: \text{number of time in hour}$$

K : reaction velocity constant.

t	A (Angle of rotation)	ϵ	K
0	56.5	—	—
1	59.0	0.00610	0.001452
2	61.0	0.01126	1403
3	62.7	0.01608	1355
4	64.6	2190	1430
5	66.1	2686	1437
6	67.4	3144	1414
24	76.0	7164	—
			mean 0.001430

Tannin solution turns rapidly brownish black in the presence of amino acid or its salt, when added with the magnesium silicate colloid. The hydrolysis of starch solution by acid is also stimulated by it.

The colloid which is buried in the soil shows a little stronger oxidising action than the one exposed to the sunbeam. The viscosity of the colloid is little influenced by the addition of potassium salt and the latter is also most absorbed of all alkali salts by the former.

Magnesium silicate colloid having the concentration between $\frac{1}{10000}$ g. and $\frac{1}{20000}$ g. protects to some degree the precipitation of calcium carbonate and silver chromate from their solutions.

ON THE PRODUCTION OF AMINES BY ASPERGILLUS ORYZAE.

By Masakazu Yamada and Shō Ishida.

(Received June 2nd., 1926)

The production of diamines, such as putrescine and cadaverine, have hitherto been observed in the bacterial decomposition of proteins (Ellinger, Z. physiol. Chem. **29**, 334, 1900), in the autolysis of yeast (Schenck; Wochsch f. Brau. **22**, 221-27, 1905; K. Kurono; Journ. Chem. Soc. of Japan **36**, 1127-52, 1917) and in the ergot by the action of higher fungus. (Rieländer; Sitzungber. Gesellsch. Naturw. Marburg. 5, Aug. No. 7, 1908).

Lately one of the authors contrived a very suitable method for the isolation of diamines with naphthol yellow and actually separated cadaverine in

every case and putrescine attains from the Japanese brewery products saké, shōyu, miso and nattō. (M. Yamada; this Journ. Vol 2, 39-41. 1926).

It is well known that these products except the case of nattō are brewed by the cooperation of several bacteria, yeasts and moulds so that as the agent of amino-formation the action of moulds, especially of *Aspergillus* sp., ought not to be overlooked. The part played by the mould is the most important. It is used ordinarily at the first stage of the various brewings in Japan, in the form of "koji".⁽¹⁾

We used soy-bean as the source of protein and made *Asp. oryzae* No.54. develop on it in a wholly pure state. After about 16 days' culture, 1kg. of koji (water; 57.41%) was used for the isolation of amines by means of naphthol yellow method. By this process, putrescine and cadaverine were separated as their picrates,⁽²⁾ each weighing 0.463g. and 0.483g, along with a large quantity of ammonia.

It can be concluded that same higher fungi also produce amines from proteins.

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- (1) Kōji is prepared from the steamed rice in case of saké, steamed mixture of wheat and soy-bean in case of shōyu, steamed soy-bean only in case of tamari-shōyu or steamed soy-bean with or without the addition of rice or wheat, according to the kinds, in case of miso, upon which the mycelium of *Aspergillus oryzae* has been developed in every case.
- (2) They were identified in each case from their melting point and also from the content of picric acid by means of Busch's nitron reagent.
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STUDIES ON SOIL PROTOZOA.

I. Influence of soil protozoa on nitrogen fixation of *Azotobacter*.

Keizō Hirai and Iwao Hino.

(Received June 5th., 1926)

The authors present in this paper their experiments carried out in order to ascertain the facts previously shown by Nasir on the influence of soil protozoa upon nitrogen fixation of *Azotobacter*.

The authors found that the nitrogen fixation of *Azotobacter* is generally stimulated and not inhibited in the presence of soil protozoa.

In the presence of soil protozoa, the highest fixation of nitrogen is recorded in this experiments to be 37.70% over the control plot in a sand culture. Out of fifteen experiments eleven showed a decided gain in nitrogen fixation over the control and two showed no gain, while two gave negative results