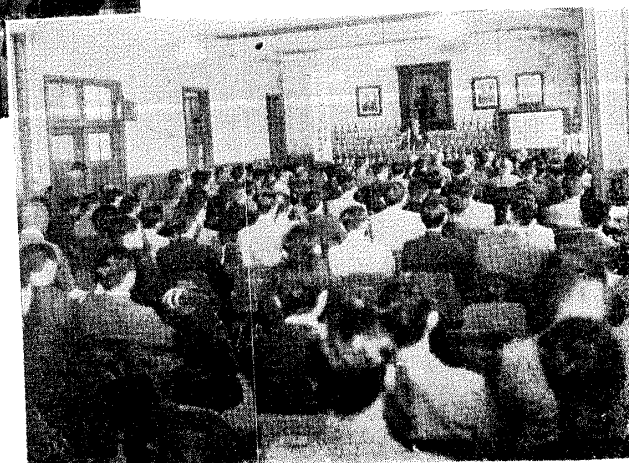
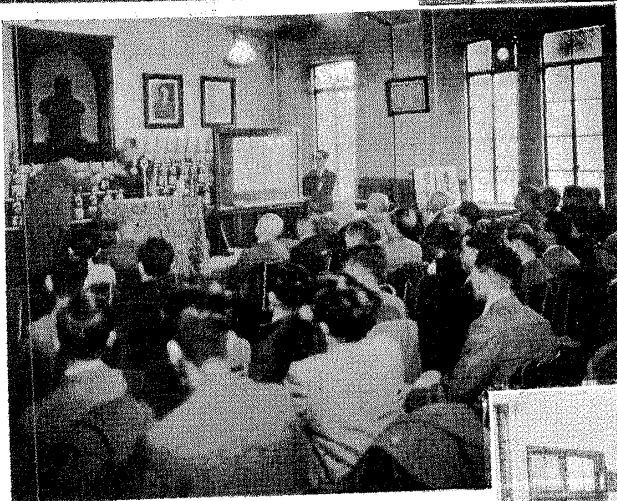
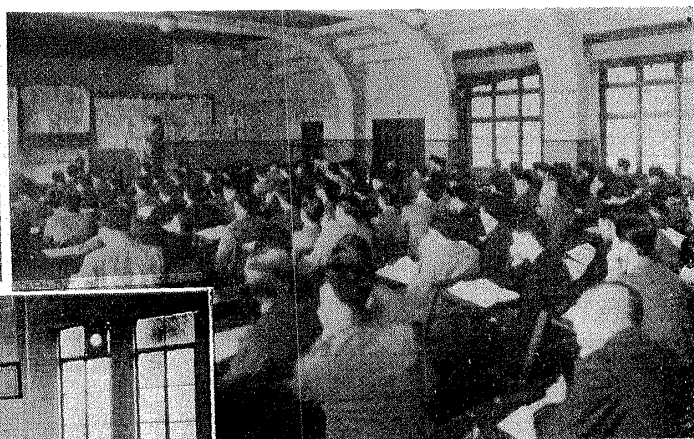
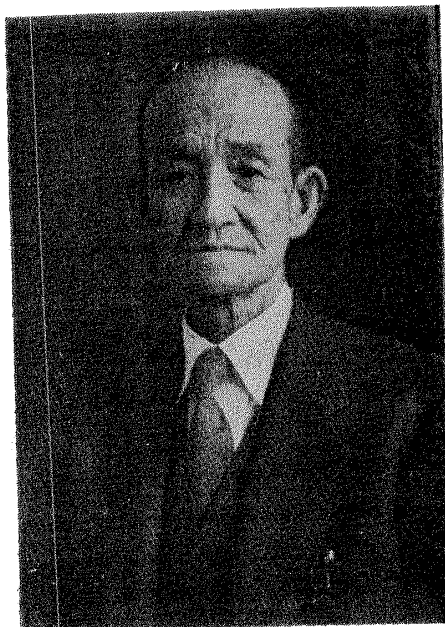


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賛助會員への感謝！

豫て學術振興に對し深き御理解を有せられ殊に本會へ御厚情を蒙り誠に有難く御禮を申し上げます。茲に謹みて芳名を列記し感謝致します。(略敬稱到着順にて登載)

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Journal of Fermentation Technology. Vol. 32, No. 11. 1954

Studies on the Role of Phosphorus Components in Sake-Brewing (III)

On the Phosphorus Components of Rice and Their Variations during Koji-making Process in Sake-brewing

Taro MORI, and Kazuo WATANABE (Laboratory of Honkano Shoten, Ltd.)

The authors determined the total P., inorganic P. and acid-soluble total P. in rice for sake-brewing through the Koji-making process, and also derived by computation from their values the organic P., acid-soluble organic P., phospho-protein and phospho-lipids.

Total P. in rice cropped in 1953 was slightly less than that of rice cropped in 1952, both in unpolished and polished states, but it was not different from that of rice cropped in 1951.

Inorganic P. is 3.04~6.06 mg/100 g, and acid-soluble total P. is 8.77~20.35 mg/100 g in polished rice. Californian rice contains much more total P., inorganic P., and acid-soluble total P. than Japanese rice (home grown).

As to the variations of phosphorus components through the koji-making process, the amount of total P. was not changed, but inorganic P. increased or decreased parallel with acid-soluble total P.. Both the P. decreased a little in their amounts till mycelia were formed, but then began to increase from some 30 hrs after the start.

This fact may be so explained that inorganic P. changes into energy-rich P. (organic P.) owing to the growth of mycelia and after that the organic P. gradually decomposes into inorganic P..

Studies on the Carotene Production by Micro-organisms (X)

Effects of Light on the Formation of Carotene in the Conidia of *Neurospora sitophila*

Ryuichiro ISHII and Chieko IWAGAKI (Osaka Municipal Hygienic Laboratory)

The object of the present investigation was to examine the effects of diffused sunlight and artificial light on the development of lycopene, carotene and total carotenoids in the conidia of *Neurospora sitophila*. The increase of carotene and other carotenoids was most remarkable, when the conidia were illuminated at a place 1~2 m distant from the tungsten lamp (100 V, 100 W., Matsuda lamp, 28~112 lux) for 2~4 hrs. For example, the carotene produced under that condition corresponded to 150~180 % of the control.

Exposure to diffused sunlight for more than two days was also effective to the formation of the carotenoids, but irradiation under direct sunlight for more than one hr destroyed the carotenoids in the conidia.

(42)

Studies on the Improvement of Alcohol Mash (II)

On the Saccharification of Steamed Sweet Potato by Several Fungi

Yosio OTANI and Satoru TAKAHASHI (Dept. Agric. Chem., Facult. Agric., Tottori Univ.)

Examining the saccharifying activity of enzyme solution obtained by submerged culture of several strains of fungi on the media chiefly composed of sweet potato powder and rice bran, the following results were obtained.

1) Sweet potato powder was steamed under pressure (30, 40, 50, 60 lb), and the saccharifying activities of enzyme solutions obtained from the cultures of several fungi on it were measured with soluble starch as substrate. In *Asp. oryzae* the saccharifying activity was comparatively independent of the steam pressure applied, but in *Asp. usamii* the activity was directly proportional to the pressure. This relation lay in *Asp. awamori* between the above-mentioned two species.

2) When sweet potato powder steamed under pressure (30, 40, 50, 60 lb) was acted by enzyme solutions obtained by submerged cultures of several fungi, the pressure difference exerted no great effect on the enzymatic activity of *Asp. oryzae* and *Asp. awamori*, but in *Asp. usamii* and *Asp. niger* the effect of high pressure on the saccharification was especially remarkable with the starch cooked under 60 lb.

3) As for the influence of concentration of enzyme solution on its saccharifying activity, the effect was least in *Asp. oryzae*, next came *Asp. awamori*, and in *Asp. usamii* and *Asp. niger* the saccharifying activity increased with the concentration of enzyme solution.

Studies on the Classification of *Streptomycetaceae* and *Actinomycetaceae* (IV)

Microscopic Morphology of *Streptomyces viridochromogenus*

Hirosuke NAGANISHI, and Ryosaku NOMI

(Dept. Ferment. Tech., Facult. Engin., Hiroshima Univ.)

We researched microscopic morphological characters of *Streptomyces viridochromogenus* (KRAINSKY) WAKSMAN (IFO 3113).

The morphological characters of this strain is very similar to *S. coelicolor* except the curvature of spirals. The curvature of spirals of this strain are sinistrorse under the microscope, extended to compact, 2 to 6 or more turns, 2.2~4.8 μ in diameter. Other morphological characters are almost the same as *S. coelicolor* reported in the last paper.

Studies on the Variation of Yeasts (II)

On the Natural Variation and Preservation of Strains

Masao ODA and Kentaro WAKABAYASHI

(Dept. Ferment. Techn., Facult. Engin., Osaka Univ.)

The effects of culture media, preservation temperature, and interval of transfer upon the morphological and physiological characters of sake-yeast, such as cell form, cultural characteristics, sporulating ability, fermentability of sugars, fermentation

power and flavour of fermented liquid, were examined during its preservation. Addition of a small amount of dry yeast-, carrot-, Indian corn-, potato-, or rice bran-extract to the koji extract agar prevented to some extent the degeneration of the yeast, and especially cyclic transfer to the above-mentioned media gave a most favourable result for the preservation.

Fundamental Studies on the Manufacture of Natsudaïdai Juice (XIV)

On the Mechanisms of the Browning (4)

Glucose-Glycine Reaction

Danji NOMURA, and Masao KAWANO (Facult. Agric., Yamaguchi Univ., Shimonoseki)

The authors studied on the mechanisms of the browning, using the glucose-glycine reaction as the model system, and the following results were obtained.

1) As for the change of the forms of nitrogen in this system, the total nitrogen and amino nitrogen had decreased, and ammoniac nitrogen had increased with the proceeding of the reaction, but the liberated ammonia was very little. The ammonia formed by this reaction is a nitrogen source of brown substance which is produced by the condensation of ammonia with sugar and its decomposition products, hydroxymethyl furfural and other dehydration products.

2) The carbon dioxide liberated in this browning reaction is derived from the carboxyl group of glycine, rather than from the glucose radical, and its liberation precedes the color production.

3) The formation of hydroxymethyl furfural from glucose was accelerated by glycine, and took place parallel to the color production. The concentration of the colored substance as well as the amount of hydroxymethyl furfural produced in this reaction was proportional to the square of the reaction time and also the slope of the line was proportional to the glucose concentration and the square of the concentration of glycine.

4) The colored materials produced in this reaction had been studied by paper chromatography, polarography and ultraviolet absorption spectrum, and N-glucoside, hydroxymethyl furfural, formaldehyde, levulinic acid and formic acid were detected as the intermediary products.

A Method for the Measurement of Amylase Activity of Sake-koji

Tamotsu ADACHI (The YASUFUKU Brewing Co., Ltd.)

On the basis of the relation between reaction time and light transmission of WOHLGEMUTH's iodine-dextrin reaction mixture, the author has proposed an improved procedure for the determination of dextrinizing activity of sake-koji.

The basal conditions applied are essentially same as WOHLGEMUTH's method. 0.5 cc of an enzyme solution is added to 10 cc of 1% soluble starch solution. After an appropriate period of reaction (e. g. 3 min), 0.2 cc of 10% HCl is added to the solution to stop the reaction, and then the color is developed by adding 25 volumes of N/4000 I₂-KI solution. The light transmission is compared with N/2000 iodine solution, using 670 mμ filter and 10 mm cubet.

(44)

The estimation of amylase activity consists in the calculation of "time value" for WOHLGEMUTH's end point from the electrophotometric readings by use of the standard transmission-time curve and according to the equation,

$$D_{30}^{40} = 200x$$

Where $x = t/t_0 \times 100$, in which t is the reaction time and t_0 the time necessary to attain 66% light transmission.

This method may be applied within the pH range of 4.0~7.0 and the temperature range of 10~40°C.

Dextrinase activity may also be measured similarly by using dextrin as the substrate and 460 m μ filter. In this case 45% transmission is taken as the end point.

Studies on the Sporulation of *Aspergillus oryzae* (II) On Modified CZAPEK-agar Media (1)

Takeo NEHIRA (Dept. Ferment. Techn., Facult. Engin., Hiroshima Univ.)

The conditions for the sporulation of *Asp. oryzae* have been investigated with the modified CZAPEK-agar. The results are summarized as follows.

- 1) Optimum pH for sporulation is 3.0~6.0.
- 2) Trace elements in soil, added in the form of soil extracts, have no influence upon sporulation in cultures with media prepared from compounds of "extra-pure" grade.
- 3) Variation in concentration of KH_2PO_4 within the range of 0.05~1.0% produces no effect.
- 4) Superior carbon-sources are sucrose, fructose, maltose and soluble starch; glucose is less superior and lactose is inferior for sporulation. Optimum concentrations of sucrose and glucose for sporulation are 2~6 and 6 %, respectively. The effect of glucose concentration examined within the range of 3~25% is almost imperceptible.
- 5) Basal concentration of the ingredients in CZAPEK-agar is optimal for sporulation. The higher the concentration is made, the later the sporulation takes place.