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Effects of the plant growth regulator (P. G. R.) on the reaction of proteinase,  $\gamma$ -amylase and acid phosphatase were investigated, and also were the conditions of production of P. G. R. by *Streptomyces* sp. 445. The P. G. R. had no effect on the activities of such enzymes in mung bean seedling. But in germinating seed previously treated with P. G. R. it effected the activity of protease in cotyledon.

In the conditions of production of P. G. R., the maximal activity was appeared in shaking culture at 30°C for 5 days, and by the addition of peptone or casein hydrolysate as nitrogen source, soluble starch as carbon source, and sulfur as metal ion.

#### 16. 酵母에 의한 Phenol 性 物質의 資化에 對하여

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Phenol 性 物質이 含有된 産業廢水의 處理와 phenol 을 炭素源으로 하는 菌體를 利用할 目的으로 工業廢水의 汚泥로부터 phenol 資化能이 우수한 酵母 菌株를 선택하여 이 菌의 生育에 미치는 環境要因을 調査하였다.

初發 pH 3.5~4.5에서 35°C 경우 資化能이 가장 좋았으며 HgCl<sub>2</sub> phenylhydrazin 10<sup>-3</sup> M濃度에서 완전히 資化能을 잃었다. 培養基 中の 窒素源으로 KNO<sub>3</sub>, (NH<sub>2</sub>)<sub>2</sub>CO 가 가장 좋았으며 yeast extract 0.01% 첨가하므로써 가장 높은 發育效果를 보았다. Phenol 을 연속적으로 90 시간까지 5회 feeding 하며 계속적인 菌體增殖과 phenol 소모를 보았으며 한편 本菌이 catechol, resorcinol도 資化할 수 있다는 점도 알았다.

#### 17. Hydrolysis of Rice Straw with *Trichoderma viride* TO4 Cellulase

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Rice Straw was delignified by autoclaving with 1% NaOH solution at 121°C for one hour and

was disintegrated by a Wiley mill to 60 mesh. This substrate was saccharified with cellulase produced by *Trichoderma viride* TO4 in solid culture medium. The rate and extent of hydrolysis were both increased when high enzyme concentration and low substrate concentration were employed. The original cellulose was treated with 0.19 FPA unit for three hours and followed by the second treatment for the same period with the same concentration of enzyme after washing. By doing this the hydrolysis rate at the second stage could increase four folds of that unwashed. The same experiment with 0.32 FPA unit yielded two folds suggesting an end-product inhibition on the reaction system. The extent of hydrolysis however, could not be increased by this process.

#### 18. 납의 耐性菌에 關하여

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工場廢水 및 汚泥로부터 납에 耐性이 강한 한 菌株를 分離하여 이 菌株의 生理的 特性과 生育度를 檢討하였으며 아울러 本 菌株의 菌體內에 납의 蓄積과 分布를 조사하고 菌體의 細胞內 微細構造 變化를 電子顯微鏡으로 觀察하였다.

#### 19. Chitinase Produced by *Streptomyces* sp.

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The Chitinase which hydrolyzes the chitin,  $\beta$ -1, 4-polymer of *N*-acetyl glucosamine, was purified from the culture broth of *Streptomyces* sp. 115-5 strain.

The homogeneity of enzyme was revealed by CM-Sephadex C-50 column chromatography and polyacrylamide gel electrophoresis. The purified enzyme hydrolyzed chitin and chitosan, but not cellulose. And with chitin as the substrate, a *K<sub>m</sub>* value of 3.6 mg per ml and a *V<sub>max</sub>* of 100  $\mu$  mole per hr were found. The activation energy for the reaction was 3.66 Kcal per mole. The M. W. was estimated 56,000 daltons, and PI as 3.0. The

chitinase was inhibited by the addition of glucose, glucuronic acid, sorbitol and xylose as product inhibitors and its inhibition pattern by glucose was estimated pure competitive type.

## 20. Domestic Sewage Treatment with a Successive System of Activated Sludge Process and Phytoplankton Cultivation

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Treatment of domestic sewage discharged from big cafeteria kitchen, especially rice-washing water, was examined by the use of activated sludge process and phytoplankton cultivation. Only with a activated sludge process COD value decreased from around 1000 mg/l to 100 mg/l, but nutrients, such as nitrogen and phosphate could not be removed sufficiently phytoplankton cultivation in combination with a activate sludge process could decrease COD value down to 50 mg/l and nutrients values were also reduced substantially. However, the initial concentration of 20 mg/l in the rice-washing water could not be removed completely without addition of activated sludge as a nitrogen source.

## 21. 汁醬製造에 관한 研究

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즙장은 독특한 풍미가 있으며 지방마다 원료의 종류, 발효, 숙성 조건 등이 달라서 그 질은 매우 다양하다. 또한 그 製造方法이 번거로워서 전통 고 유식품으로 전수되지 못하고 있는 실정이다. 본 研究에서는 즙장제조에 있어서 가장 적합한 원료의 배합비율과 발효숙성조건을 확립하기 위하여 원료의 배합비와 식염농도 0~15%, 온도 40~60°C의 범위에서 발효숙성 조건을 달리하여 성분의 경시적인 변화를 조사하고 제품의 질을 관능검사에 의하여 판정하였다.

1) 원료로서의 참쌀과 메주의 배합비는 10 : 2의 것이 가장 적합하였다.

2) Amino-N의 생성은 숙성 48 시간 전후에 최대치에 달하였으며 NaCl 농도 15%에서 가장 적었고 발효숙성 온도차에 따른 영향은 없었다.

3) 환원당은 식염농도 증가에 따라 다소 증가하였으며 숙성온도 50°C에서 가장 많이 생성되었다.

4) 총산은 식염첨가량이 적을수록 증가되었으며 숙성온도 40°C 및 60°C에서 산 생성량이 많았다.

5) 관능검사결과 식염농도 10%, 숙성온도 50°C의 것이 가장 양호하였다.

## 22. 難分解性 ABS 耐性菌의 分離, 同定 및 그 活性

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國內市販合成洗劑에 含有된 難分解性 ABS(=alkyl benzene sulfonate)의 分解度가 우수한 ABS 耐性菌을 아프트단지 하수구에서 分離하여, 分離菌을 同定하고 本菌에 對한 合成洗劑 濃度와 pH 영향, 음 ion 界面活性劑 構造와 濃度別 分解率을 조사하고, 금속 ion 이 共存할 때에 最高生育限度, 진탕과 정치培養時 ABS 의 分解率을 比較하고, 合成洗劑를 濃度別로 함유한 배지에 分離面을 培養시켜 形態 變化 등을 전자현미경으로 觀察하였다.

## 23. Studies on the Venom Inhibitor

### (Part V) Reaction of the sample *in vivo*

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Previously, we reported the inhibitory substance which reacts on venoms proteinases and haemorrhagic factors. The active substance was originated from soil fungi. This report describes the results of molecular weight determination, the activity by the derivatives, and also the reaction *in vivo* by the administration of sample L175-68-B.

## 24. 微生物에 의한 Glutathione 生産에 관한 研究 (第 2 報) Glutathione 抽出條件에 關하여

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*Rhodotorula glutinis* 培養菌體에 含有되어 있는 glutathione 을 회수키 위하여 본 연구에서는 열수 처리, acetone 처리, 초음파처리, 황산처리, 초산