## 205. CLINICAL APPLICATION OF LACTASE PREPARATES.

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Disaccharidase activities of the intestinal mucosa in Japanese adults (30 cases) were measured by the Dahlqvist's method, although it was already reported that milk intolerance were prevalent in the colored race. The activities of multase and sucrase were not so much different from Europian's, but the activities of lactase indicated distinctly the lower level, namely 22 of 30 cases showed less than 0.5 unit/g. wet wt..

Lactose 50 g. tolerance test (L.T.T.) studied in 24 cases induced diarrhea in 20 cases, but no elevation of blood sugar more than 20 mg./dl. except one case. Comparing with this result, glucose 25 g. plus galactose 25 g. tolerance test induced blood sugar elevation without diarrhea (mean elevating blood sugar value were 32 mg./dl.)

Then, we observed the effects of lactase preparates, containing β-D-Galactosidase 20,000 ONPG unit/mg., both in vitro and in vivo.

1: in vitro; 5 g. of preparate hydrolysed 100 per cent of lactose 50 g. after 30 minutes operation.
2: in vitro; 1 g. of preparate hydrolysed 99 per cent of lactose 8 g., contained in caw milk 200 ml., after 40 minutes operation.
3: in vivo; L.T.T. with 5 g of this preparate on 20 cases. At this time, addition of bicarbonate of soda 1 g. and bicarbonate of calcium 1 g. was effective to prevent inactivating action of gastric juice. As a result of this test, diarrhea were found only 7 of 20 cases, and the blood sugar elevation over 20 mg./dl. were found in 13 of 20 cases (the degree of elevation value ranged 8-65 mg./dl., mean 26 mg./dl.).
4: in vivo; Lactase 1 g., bicarbonate of soda 0.5 g. and bicarbonate of calcium 0.5 g. with 180 ml. of hot caw milk were prescripted to 21 cases who had the history of milk intolerance. As a result, 12 cases did not complain any discomfort and were still asymptomatic, and 7 cases complained slight abdominal discomfort with the reduction of diarrhea, and 2 cases were ineffective.

From these facts, it is comfirmed that lactase preparates by mouth are effective for its sufficient digestive action to ingested lactose, and also effective to milk intolerant subjects, and clinical application of this drug is expected as one of digestive enzyme preparates.

## 206. STUDIES ON PENETRATION OF ACTIVE POLYPEPTIDES THROUGH INTESTINAL MEMBRANE —RELATIONSHIP BETWEEN AMINO ACIDS AND GLUCOSE—

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In the last 54 th General Assembly of Japanese Gastroenterology it was presented that we devised a new in-vitro circulatory apparatus which could automatically record the penetration phenomena through the intestinal wall by determination of ultra-violet absorbance.

In the present experiment the interactions among Insulin, L-, D-tryptophane, L- and D-phenylalanine were investigated by use of this apparatus. As the result of it, Insulin penetration was inhibited by pre-treatment of mucosal side with the Amino Acids mentioned above. Some of

Insulin added to serosal side, could peneratrate to mucosal side. As the concentration of Glucose in circulatory fluid increased, amount of penetrated Insulin from mucosal side to serosal side enhanced.

The penetration of L-tryptophane was acceralated by pre-treatment of mucosal side with Insulin or L-phenylalanine. On the other hand, that of L-phenylalnine was also done by pre-treatment with L-tryptophane. It is, therefore, assumed that there could exist a syneristic action between L-tryptophane and L-phenylalanine. When each of those four Amino Acids were added to serosal side, its penetration phenomenon to mucosal side could not be observed, which was different from that of Insulin. D-tryptophane was acceralated by pre-treatment with Insulin but not with D-phenylalanine.

Based on the above obtained results, we will make effort for pathological elucidation of intestinal disturbance by further investigation of the penetrating mechanism.

**References**

1) Shoichi Nakano, *et al.*: In-Vitro method for the studies on penetration phenomena through intestinal membrane,: J. Physiol. Soc. Japan, (1968), 30, 415-416.
2) Shoichi Nakano, *et al.*: Studies on penetration of Insulin and Proteolytic Enzyme through intestinal membrane: Clin. Endocrinol. Japan, (1967), 15, 411-417.
3) Shoichi Nakano: Studies on penetration phenomena of Active Polypeptides and Protein through intestinal membrane: Saishin-Igaku, (1965), 20, 2963-2970.

## 207. CLINICAL STUDIES ON INTESTINAL DIGESTION AND APSORPTION. (II) MALABSORPTION AND DERMATITIS HERPETIFORMIS IN JAPAN.

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In recent years the relationship between disease of the skin and the small intestine has been discussed. Shuster *et al* (1968) reported detail of dermatitis herpetiformis complicated with intestinal abnormalty and malabsorption. But yet there are a few cases reports in Japan. Lately we have investigated dermatitis herpetiformis in 2 cases. Case 1: She is 66 years old housewife, she falled itching erythema, blister and erosion of the whole body's skin from on June 1968. Her laboratory data showed slightly anemia and much eosinophilia in periphery blood and blister substants. Serum total protein was 5.6 g/dl, excreted faecal fat 5.78 g/day, $^{131}$I-triolein test showed malabsorption pattern and faecal excreted radioisotope activities were 5.76%, but pancreozymin-secretin test showed normal enzyme activities. Per oral jejunal biopsy has done. stereomicroscopic appearance were leave pattern, and was not seen inflammately cell and eosinophilic cell infiltration in microscopic findings. Electron microscopic observations were not seen abnormal findings. There was examined by immunofluorescent technics, basement-membrane antibodies were negative. Case 2: She is 54 years old housewife, her periphery blood and blister contents were observed eosinophilia samely case 1, and hypoproteinemia (T.P. 4.2g/dl) was seen. $^{131}$I-RISA absorption test were low blood radioisotope activity, but steatorrhea was not seen. Per oral Jejunal biopsy were seen normal findings and basement-membrane antibody were negative samely Case 1. Two cases were given gluten diet, but not seen gluten sensitivity in the intestinal biopsy specimen and clinical complaint. Case 1 was alactasia, case 2 was lower levels in lactase activity of intestinal mucosa. It will be thought that causes of malabsorption related dermatitis herpetiformis in Japan were different from Western ones.