Results and discussion. The total fat content in the S-strain and the 3 R-strains did not vary greatly, i.e. 3.2, 2.9, 3.9 and 3.1% for the S-, DDT R-, methyl parathion R-, and carbaryl R-strains, respectively. This is in contrast to several publications showing a positive correlation between insect resistance to different insecticides and the amount of insect fat (MUNSON and GOTTLEIB[11]; MUNSON et al.[1]; BENNET and THOMAS[4]; KHAN and BROWN[12]. The results of BRIDGES and COX[13], and ASCHER and NERI[14] are generally in agreement with ours.

Storage and rates of disappearance of DDT, methyl parathion and carbaryl are shown in the Table. The DDT R-strain (3-fold resistance by injection) stored about double the amount of DDT that was stored by the S-strain in the first 3 h after application. This suggests that storage of DDT is an important defence mechanism in *S. littoralis*. The enhanced rate of disappearance of the stored DDT in the R-strain is probably due to an increased rate of detoxication, as was found in the housefly by MIYAKE et al.[15]. 6 h after treatment, similar amounts of DDT were found in both strains and remained so for the rest of the experimental period.

Methyl parathion was also stored in considerable amounts in the R-strain. Compared with DDT, its rate of disappearance was much lower. On the other hand, storage of carbaryl and its rate of disappearance were almost equal in both S- and R-strains. This might be accounted for by a low lipid solubility and/or a high detoxication rate in the fat bodies of both S- and R-strains.

These results suggest that the levels of storage of DDT and methyl parathion in the R-strains is almost due to differences in the molecular species of fat, as compared to the S-strain.

Zusammenfassung. Signifikante Unterschiede des gesamten Fettgehaltes zwischen S- und R-Arten der *Spodoptera littoralis* wurden nicht festgestellt. DDT und Methylparathion wurden im Gegensatz zu Carbaryl in den R-Arten gespeichert und die Reduktionsrate von Methylparathion erwies sich als wesentlich niedriger als bei DDT.

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Effect of Prostaglandin $F_{2\alpha}$ on the Secretion of Pancreatic Juice Induced by Secretin and by Dopamine

Prostaglandins (PGs) are biosynthesized in most tissues from essential fatty acid. Thus neither specific tissue for production nor specific organs for their action have been identified yet. Many PGs, however, have potent peripheral vascular action[1–3] and a variety of actions on the gastrointestinal tract[4,5]. Recently, it was reported that prostaglandin E_1 (PGE_1) inhibited the volume of pancreatic juice induced by secretin and pancreozymine in dogs[6]. Since a very potent effect of prostaglandin $F_{2\alpha}$ ($PGF_{2\alpha}$) on the dog's submaxillary gland has been reported[7], the response of the pancreas to $PGF_{2\alpha}$ attracted our interest. Previously we have developed the blood-perfused isolated canine pancreas preparation and have found specific secretogogue activity of dopamine[8]. In the present study, the effect of $PGF_{2\alpha}$ on the secretin- and dopamine-induced pancreatic secretion has been investigated using this preparation.

Experiments were performed on 7 adults mongrel dogs weighing 11–14 kg. The animals were anesthetized with 30 mg/kg of sodium pentobarbital injected i.v. The supranavel abdomen was opened by a midline incision. A polyethylene tube was inserted into the main pancreatic duct and the rate of secretion measured by a drop counter. The accessory pancreatic duct was ligated. Polyethylene cannulae were inserted into the gastroduodenal and the splenic arteries through which the pancreas was perfused with the animal's own blood from the left femoral artery by means of a Harvard peristaltic pump (Model 500–1200). All experiments were performed under constant arterial pressure at 100 mm Hg by means of a pneumatic resistance which was placed in parallel with the perfusion system. The details of the preparation were described in a previous paper[8]. A dose of 300 units/kg of sodium heparin was given at the beginning of the perfusion and a supplementary dose of 200 units was given i.v. at 1 h intervals. $PGF_{2\alpha}$ was injected into a rubber tube connected to the arterial cannula on a volume of 0.1 ml for 4 sec. Secretin and dopamine were infused intra-arterially at a constant rate of 0.1 ml/min by a Harvard infusion pump (Model 600–900). Drugs used in this study were secretin (kindly given from Professor J. E. JORPES, Karolinska Institute, Stockholm, Sweden), dopamine hydrochloride (ICN) and prostaglandin $F_{2\alpha}$ tromethamine (kindly given from Nippon Upjohn Ltd.).

A typical result is shown in the Figure a) and b). When secretin was infused at a rate of 0.05 units/min intra-arterially, the pancreatic secretion started immediately and reached a constant level. Then, $PGF_{2\alpha}$ in a dose of 100 µg was intra-arterially injected. The rate of secretion diminished gradually and reached the maximum inhibition at about 5 min later, but it returned gradually to the initial level. Perfusion blood flow transiently increased about 5 ml/min and systemic blood pressure decreased about 10 mm Hg by the injection of $PGF_{2\alpha}$ even though

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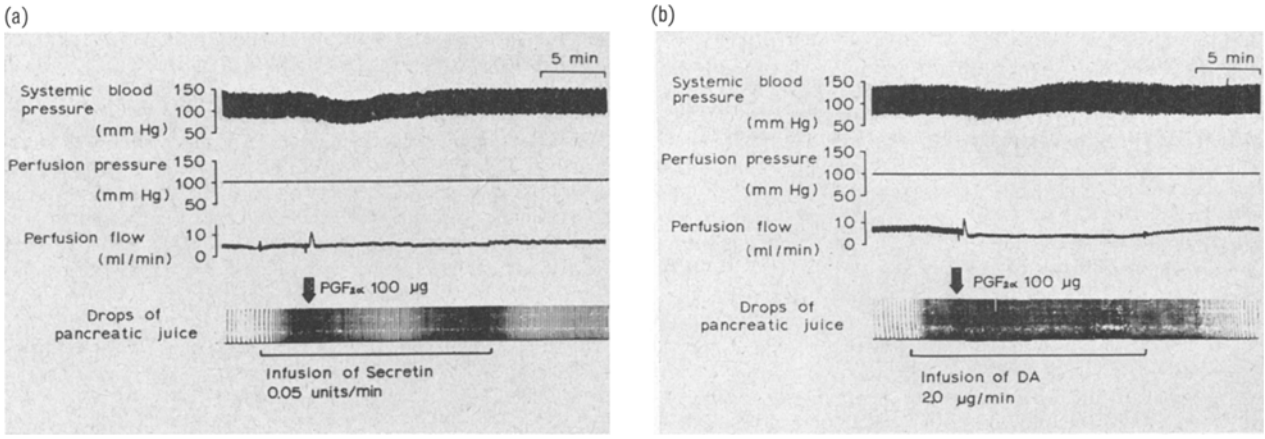

Effect of prostaglandin $F_{2\alpha}$ ($PGF_{2\alpha}$) on the secretion of pancreatic juice induced by secretin (a) and dopamine, DA. (b) The vascular responses to $PGF_{2\alpha}$ were as the same in (a) and (b).

$PGF_{2\alpha}$ was administrated intra-arterially. In some cases, the blood pressure showed diphasic response, first decreased slightly and then increased. On the other hand, dopamine-induced pancreatic secretion (2.0 µg/min) was not inhibited by $PGF_{2\alpha}$ in a dose of 100 µg, but a very high dose over 300 µg of $PGF_{2\alpha}$ slightly inhibited the dopamine-induced pancreatic secretion. The above results indicate that in the blood-perfused canine pancreas $PGF_{2\alpha}$ does not interfere with dopamine induced pancreatic secretion in the same way as with secretin induced secretion.

Zusammenfassung. Die Wirksamkeit von Prostaglandin $F_{2\alpha}$ ($PGF_{2\alpha}$) auf die exokrine Pankreassekretion wurde an einem mit Blut perfundierten Pankreas-Präparat des Hundes untersucht. $PGF_{2\alpha}$ (100 µg) hemmte die durch Sekretin stimulierte, aber nicht die durch Dopamin stimulierte Sekretion.

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Comparative Cytological Study After Prolonged Cultural Regime of Bacteria-free Crown Gall Tumour and its Corresponding Normal Tissue of *Althaea rosea* Isolated from the Same Plant

Material and method. Crown gall and corresponding normal tissue of *Althaea rosea* (Fam. Malvaceae: $2n = 42$) was maintained in modified tobacco medium[1] both in liquid and agar culture methods. For normal tissue the said medium was fortified with 2.4-Dichlorophenoxy acetic acid (0.5 mg/l) and cocoanut milk (15% v/v). Cytological observations were taken at 3-day-intervals. Chromosomes were stained with 1% aceto-carmin solution after being pretreated with saturated *p*-dichlorobenzene for 30 min at 14 °C.

Results and discussion. The distribution pattern of the different ploidy cells was similar in gall and corresponding normal tissues (Table). The percentage of tetraploid were significantly high in comparison to other ploidy cells in both the cell types in different cultural conditions. Aneuploids were significantly ($p < 0.01$) lower in gall tissue cells than the normal counterpart. Minimum chromosome number observed was 14 in both the cell types.

Chromosomal abnormalities such as lagging chromosomes, unequal seperation of chromosomes, bridges at

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Percent distribution of different ploidy cells in *Althaea rosea* gall and normal tissue in liquid and agar cultures

	n	2*n*	3*n*	4*n*	5*n*	6*n*	Aneuploids[a]	Cells with cytological irregularities[b]	Total count
Liquid culture									
Normal tissue	7.07 ± 0.13	19.19 ± 2.10	8.08 ± 1.49	30.25 ± 2.33	7.07 ± 0.13	5.10 ± 0.11	23.24 ± 2.25	20.15 ± 2.14	350
Gall tissue	5.75 ± 0.11	20.00 ± 2.03	5.33 ± 0.11	44.48 ± 2.52	8.58 ± 1.43	4.79 ± 0.10	11.07 ± 1.59	12.50 ± 1.68	387
Agar culture									
Normal tissue	6.13 ± 0.12	21.69 ± 2.06	2.45 ± 0.02	29.36 ± 2.27	6.47 ± 0.12	7.18 ± 0.12	26.72 ± 2.21	18.75 ± 1.94	402
Gall tissue	10.05 ± 1.59	17.32 ± 2.04	6.76 ± 0.13	38.67 ± 2.57	5.17 ± 0.12	6.45 ± 0.13	15.56 ± 1.91	14.25 ± 1.85	358

[a] Including hypohaploid and higher than 6*n* cells. [b] Total percentage of cells with unequal seperation of chromosomes, lagging chromosomes and bridges at anaphase and micronuclei formation at telophase.