of 1.25 mg/100 ml was able to stimulate glycogen synthesis in the incubated tissue with a potency equivalent to 1 mU of cristalline insulin. Conversely, this compound was unable to modify the stimulatory effect of insulin upon the above-mentioned process (data not shown). No data are available yet about the effect of 3-PT on carbohydrate metabolism. Studies are in progress trying to explain the mechanism through which the drug exerts its glycogenic effect. This compound also inhibits the release of NEFA from adipose tissue elicited by norepinephrine in vitro[3]. The miniumum effective drug concentration employed in those experiments was below that used in the present ones ($10^{-3}M$ and 8.1×10^{-2}, respectively). Experiments performed in human beings have demonstrated that the administration of this compound significantly lowered the NEFA serum levels in normal fasted volunteers[2,3,6].

The present results clearly show that the 3-PT works directly on muscle carbohydrate metabolism. Thus, this compound could play an important role in the treatment of clinical diseases in which both conditions, high levels of circulating NEFA and impaired carbohydrate metabolism, are present, such as the case of diabetes. This possiblity warrants further research on the applicability of this drug.

Resumen. Mediante la incubación de hemidiafragmas de ratón, se estudió el efecto de un potente hipolipemiante sobre la síntesis de glucógeno in vitro. Este compuesto, 3-PT, produjo un franco incremento de la síntesis de glucógeno, comparable al obtenido con 1 mU de insulina.

E. P. DE GAGLIARDINO, A. M. G. DE YASHAN, E. MONTUORI and J. J. GAGLIARDINO[7,8]

Laboratorio de Endocrinología Experimental, Instituto de Fisiología, Facultad de Ciencias Médicas, Universidad Nacional de La Plata, 60 y 120, La Plata (Argentina), 12 July 1971.

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Y-Organ of the Crab, *Varuna litterata* (Fabricius)

GABE[1,2] observed a pair of glands in the maxillary or antennary segments of malacostracans and named them 'Y-organs'. Since his discovery, the morphology of this organ has been reported in a few crustaceans[3,4]. Surgical ablation and replacement therapy have confirmed that the Y-organ hormone controls various physiological activities of the crustaceans.

In the crab, *Varuna litterata*, the Y-organ on either side is situated ventral to the adductor muscle in the antennary segment. It is a compactly ovoid structure (Figure 1) measuring 0.4–0.5 mm in diameter and is surrounded by a sinus. For the histological observations on Y-organ, paraffin sections of the tissue fixed in Bouin's fluid were cut at 6–8 μm and stained with Gomori's chrom-alum-haematoxylin phloxin (CHP) and Heidenhain's azan methods[5].

The Y-organ is composed of closely packed subspherical cells distinguishable into 2 types: small and large. The small cells are more abundant, with a distinctly staining, roughly spherical nucleus. The nucleus is characterized by a single, centrally placed or peripherally situated nucleolus. The chromatin material, in the form of small particles, is seen lining the inner surface of the nuclear membrane. The cell outline, as also the cytoplasm, are indistinct (Figure 2). The large cells are scarce and when stained with CHP show phloxinophilic nuclei and basophilic cytoplasm. The evenly distributed cytoplasmic granules are coarse and basophilic in nature. The nucleus possesses a central nucleolus and the chromatin material is uniformly

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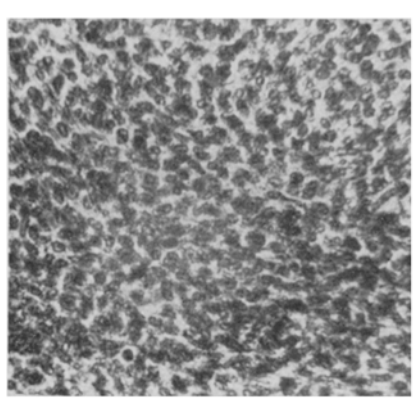

Fig. 1. Transverse section of the Y-organ of *V. litterata*, showing closely packed cells.

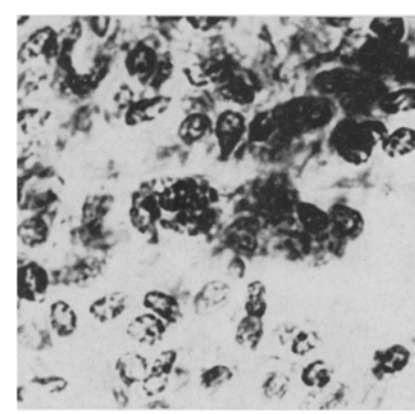

Fig. 2. Transverse section of the Y-organ of *V. litterata*, showing 2 types of cell.

scattered in the nucleoplasm. With Heidenhain's azan, these cells are easily identified as they show strongly orangeophilic reaction (Figure 3).

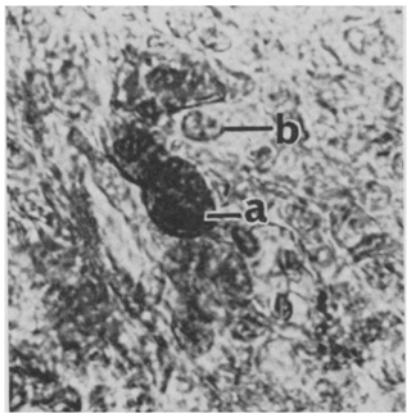

Fig. 3. Transverse section of the Y-organ of *V. litterata* showing selectively stained (Azan) large cells. a) large cell; b) small cell.

According to the earlier literature, the Y-organ of the crustaceans so far studied is composed of only one cell type, but the present study on *V. litterata* revealed 2 cell types in the organ. The Y-organ is known to regulate various physiological activities such as moulting, calcium distribution and reproduction[6]. It is difficult to say whether separate hormones are involved in the regulation of these 3 physiological processes. But the occurrence of 2 types of cell in the Y-organ points to the possibility of the secretion of at least 2 hormones by the Y-organ. Further work on these lines is in progress.

Résumé. Dans l'«organe Y» du crabe *V. litterata*, deux types de cellules ont été observés et leurs caractères morphologiques sont décrits.

M. N. Madhyastha[7] and P. V. Rangneker

Animal Physiology Division, Zoology Department, Institute of Science, Bombay-32 (India),
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Cytological Effects of Vinblastine in Plants

During the last decade, the cytotoxic action of *Vinca rosea* alkaloids, especially vinblastine and vincristine, has been investigated in several biological systems[1]. In this respect, we could mention various animal cells cultivated in vitro[2], leukemic and bone marrow cells in man[3], embryonic cells in vivo[4] and haematopoietic tissues of chicken embryos[5]. Colchico-mitotic effects i.e. C-metaphases leading to polyploid cells were reported in all cases[2–5].

The cytogenetic effects which could be approximately described as radiomimetic ones, and which are distinct from the C-mitotic activity, are known for vincristine from studies on human leucocytes in leukemic patients[6]; but such effects have been far less studied for vinblastine.

All these investigations led to the use of these alkaloids in leukemia-therapy although it seems that the chemical and cytological basis of this activity is far from being fully understood. Moreover, none of the previous reported works deals with plant cells, in which, however, the action of polyploidizing agents has long been known. These are the reasons why the present investigation was designed with different plant materials.

Material and methods. Seeds of 3 plant species, i.e. *Hordeum sativum* Jess (var. Piroline), *Vicia faba* L. (ssp. minor var. Åkerböna Weibull) and *Nigella damascena* L. (var. Miss Jekyll) were germinated in petri dishes on moisted filter paper (21 °C) for 5–6 days. Root tips were immersed (3 h) in solutions of increased concentrations ($1.10^{-6}M$–$1.10^{-4}M$) of vinblastine (Velbe®, Eli Lilly and Co, Indianapolis, USA). After treatment, roots were washed with distilled water and then replaced in the above-described experimental conditions till fixation (Carnoy) at different times from 0 to 24 h after the end of treatment. Slides were prepared from Feulgen squashes.

Results. The main data for anaphase investigation are given in Table I. The radiomimetic effects consist in chromosome bridges and fragments. The amount of such aberrations is low (less than 1%) in barley and a bit higher in broad bean. *Nigella damascena* was found to be the most sensitive species. At $1.10^{-4}M$, the maximum amount of aberrations was scored 4 h after treatment; the amount decreased at longer durations after the end of the treatment. Paradoxically, the maximum amount was scored at

Table I. Percentages of anaphase aberrations

Material	Concentration (M)	Time after treatment (h)				
		0	4	8	12	24
Hordeum sativum	1.10^{-4}	—	0.0	0.0	0.5	0.0
	1.10^{-5}	0.7	0.7	0.0	0.0	0.7
	1.10^{-6}	0.3	0.0	0.3	0.3	0.0
	Control	0.3	not investigated			
Vicia faba	1.10^{-4}	2.0	3.7	–	–	1.0
	1.10^{-5}	0.7	2.7	1.0	0.0	0.7
	1.10^{-6}	0.7	0.0	0.0	1.3	0.7
	Control	2.3	not investigated			
Nigella damascena	1.10^{-4}	5.5	8.5	5.5	2.5	1.5
	1.10^{-5}	12.5	4.5	1.5	0.5	0.5
	1.10^{-6}	3.5	1.0	2.5	0.0	0.0
	Control	1.0	not investigated			

300 anaphases analyzed in *Hordeum* and *Vicia*, 200 anaphases in *Nigella*. –, Few or no anaphases owing to metaphase accumulation.

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