slightly smaller than that of the mammalian metallothionein. This estimate conflicts with the result in figure 1.
The discrepancy can be explained as follows: Since a Sephadex column has cation exchange properties at alkaline pH due to dissociation of residual carboxyl and/or hydroxyl groups of the gel material, proteins with lower isoelectric points are eluted earlier on the Sephadex column than those with higher ones[9]. The isoelectric point of the *Xenopus* metallothionein is lower than those of the 2 rat isometallothioneins (fig. 2). Hence, *Xenopus* metallothionein elutes faster than rat metallothionein (fig. 1). In accordance with the lack of aromatic amino acids, the UV spectrum of the *Xenopus* metallothionein did not show appreciable absorption at 280 nm. The shoulder of 250 nm was confirmed to arise from the cadmium-mercaptide complex since it was completely abolished upon the loss of the metal following adjustment to pH 2.5 (fig. 4).
The present study revealed the amino acid composition and some properties characteristic of *Xenopus* metallothionein. Aside from properties similar to those of mammalian metallothioneins[8], the frog metallothionein can be characterized as follows a) it consists of a single isoprotein, b) it has an isoelectric point lower than rat isometallothioneins and c) it is less stable to air oxidation than the rat isometallothioneins.

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The effect of methyl jasmonate on lycopene and β-carotene accumulation in ripening red tomatoes

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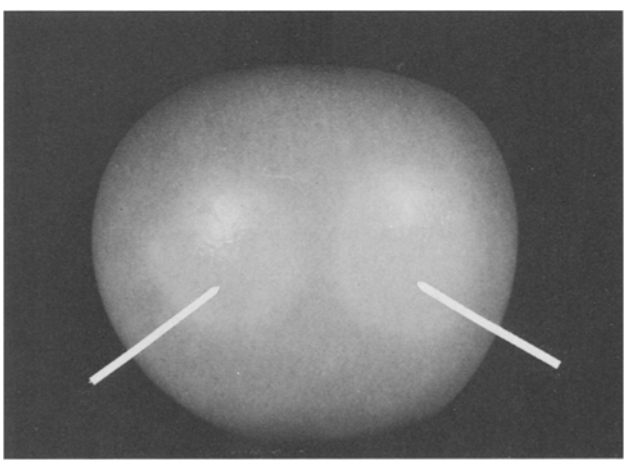
Summary. Methyl jasmonate at a concentration of 0.5% in lanolin paste was applied to detached mature green tomatoes cv. Venture. It caused the formation of a yellow colored epidermis and parenchyma at a depth of 2 mm on the place of treatment. Untreated areas, and areas treated with lanolin paste alone, developed a normal red color at the fully ripened stage. Analyses of carotenoid compositions showed that methyl jasmonate almost totally inhibited lycopene accumulation and stimulated β-carotene accumulation in the ripening of tomatoes.

Methyl jasmonate, methyl 3-oxo-2-(2′-cis-pentenyl)-cyclopentane-1-acetate, and jasmonic acid, were recently found to be powerful promotors of leaf senescence[2-4]. JA-Me and its related compounds were also found to eliminate the senescence-retarding action of kinetin when used in the dark[4]. Methyl jasmonate and/or jasmonic acid are endogenous substances which have been identified in many plants[2,5-10].
The aim of this work was to study the effect of methyl jasmonate on the ripening and carotenoid composition of tomatoes.
Materials and methods. Mature green tomatoes, *Lycopersicon esculentum* Mill. cv. Venture, grown in a greenhouse and picked on September 10, 1982 were used. Ten fruits were treated with (±)-methyl jasmonate at a concentration of 0.5% (w/w) in lanolin paste (prepared by mixing lanolin with 1/3 part of distilled water). This was applied on one side on an area of about 2.5 cm^2. The other side of every tomato was treated with lanolin paste alone as a control. During the course of the experiment, fruits were kept at room temperature (about 18 °C) under natural light conditions.

The effect of JA-Me treatment on the content of lycopene and β-carotene in tomato fruit tissue

Carotenoids	Control $\mu g \cdot g^{-1}$ fresh weights	% of total determined carotenoids	JA-Me $\mu g \cdot g^{-1}$ fresh weight	% of total determined carotenoids
Lycopene	84.30	97.6	1.43	19.6
β-Carotene	2.08	2.4	5.87	80.4

After 7-10 days, when the tomato fruits were ripe, the samples of treated and untreated tissue were cut off at a depth of 2 mm for lycopene and β-carotene analysis. Carotenoids from tomato tissues (about 2 g fresh weight) were isolated by extraction with acetone[11]. In later steps of the procedure the acetone extract was mixed with n-hexane instead of diethyl ether. Then the ether-acetone mixture



The effect of JA-Me on carotenoid formation in ripe tomatoes; arrows indicate yellow color of tissue on the place treated with JA-Me; both untreated areas and those treated with lanolin paste alone are red.

was washed several times with 30% of NaCl solution until the acetone was completely removed. β-Carotene was separated from lycopene by column chromatography on aluminum oxide (basic, activity grade I, Woelm-Eschwege, FRG). β-Carotene and lycopene were eluted separately from the column using the following solvents:

β-carotene: n-hexane-acetone = 49:1 (v/v);
lycopene: n-hexane-acetone-ethanol = 95:4:2 (v/v/v).

The eluted fractions of pigments were evaporated to dryness at room temperature under a stream of nitrogen and redissolved in appropriate solvents for spectral measurement on a Specol 10 spectrophotometer[12]. β-Carotene and lycopene were identified by their visible spectra. Furthermore, β-carotene from tomato tissues was identified by rechromatography and spectral comparison with authentic β-carotene isolated from carrots. The quantities of lycopene and β-carotene were calculated from published extinction data[12].

Results and discussion. Mature green tomatoes, treated with methyl jasmonate, developed a yellow color at the stage of full ripeness in the areas treated, to a depth of 2 mm (fig.). Untreated areas or areas treated only with lanolin paste were red. Comparative carotenoid analysis of treated and control tissues showed high differences in lycopene and β-carotene contents. Treated tissue had about 3 times more β-carotene and only trace amounts of lycopene in comparison to the control (table). The presence of the small amount of lycopene in methyl jasmonate treated sample tissues was probably caused by difficulties in separating treated tissues from untreated tissues. Thus, the lack of red color in tissue treated with methyl jasmonate was caused by the lack of lycopene accumulation and the increased content of β-carotene.

The main carotenoids in ripe tomatoes are lycopene, β-carotene and in small amounts, phytoene, phytofluene, ζ-carotene, δ-carotene and sometimes traces of neurosporene[13-15]. It is possible that methyl jasmonate inhibits the conversion of neurosporene to lycopene and stimulates the conversion of neurosporene to β-zeacarotene → γ-carotene → β-carotene[16].

Raymundo et al.[13] and Jen[15] observed that β-carotene was synthesized first and quickly reached a plateau before mass lycopene accumulation in normal red and red lutescent tomatoes. The authors suggest that 2 pathways of carotenoid biosynthesis exist in ripening tomatoes.

According to our knowledge this is the 1st report on the action of methyl jasmonate on carotenoid metabolism in plants. Detailed study of carotenoid biosynthesis at different stages of the ripening of tomatoes after JA-Me treatment are in progress.

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Distribution and number of fluorescent granular perithelial cells in coronal sections of rats cerebrum

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Summary. The fluorescent granular perithelial cells (F.G.P.) of rats aged 1 week to 2 years were observed under a light microscope to investigate intracellular granules and localization. This study showed that a marked proliferation of F.G.P. occurs within 3 weeks after birth and the total number remains constant for 2 years. The F.G.P. are mainly distributed in the gray matter, and are scarce in the white matter. The number and distribution of F.G.P. seems to reflect a difference of vascularization and function in different cerebral regions.

During aging of animals and humans, neurolipopigments are deposited in neurons, glia and perivascular cells. Recently, the lipopigments in perivascular cells of the central nervous system have attracted the attention of anatomists and neuropathologists[1-3]. The perivascular cells described in their reports seem not to correspond to pericytes, but to the fluorescent granular perithelial cells (F.G.P.) of the present authors, judging from the profiles in the figures.

As reported previously[4-6], the F.G.P. were mainly localized in bifurcations of small cerebral blood vessels and involved specific round granules which were rich in acid phosphatase and stained with the PAS (periodic acid Schiff) technic. The F.G.P. are concerned with removing waste products in cerebral tissue and regulating the uptake of blood components. However, developmental sequence, number and distribution of F.G.P. remained unknown, because the discrimination of F.G.P. was not easy under a light microscope.

In this study, the authors identified the F.G.P. by referring to location, shape and stainability of intracellular granules by the PAS technic, and carried out a quantitative study on F.G.P., observing developmental and regional differences.

Material and methods. 12 Wistar rats at 1, 2, 3 and 6 weeks,