these fibres – at least some of them – influence the visceral ganglia, because after the cutting of the cerebro-visceral connective the latter ganglia showed a significant change in catecholamine level.

Consequently, there seems to be numerous types of evidence to demonstrate the role of adrenaline played in the inhibition of tone; however, considering its inability to abolish tone completely, its role is regarded as that of an additive, facilitating factor. As formerly[7], serotonin is still thought to be a mediator in the inhibition of tone of the posterior adductor.

Zusammenfassung. Nach Durchschneiden des Cerebro-visceralkonnektivs nimmt der Adrenalingehalt im Visceralganglion und hinteren Schliessmuskel signifikant ab bei gleichzeitig leichter Noradrenalinzunahme. Die Änderungen sind in der tonischen Portion des Muskels ausgeprägter, was auf die Rolle des Adrenalins bei der Tonushemmung hindeuten dürfte.

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On the Action of Chromomycin on the Eggs and Embryos of *Ciona intestinalis*

Following the investigations of Gross and Cousineau[1,2] on the action of actinomycin D on sea urchin eggs, a number of workers have now used this antibiotic in order to study the MRNA metabolism in various eggs.

Recently, Wakisaka et al.[3] reported on a new antibiotic, chromomycin A_3, which is a powerful inhibitor of RNA synthesis in mammalian cells although it allows DNA synthesis to proceed. Thus the nature of its action is similar to that of Actinomycin D, and we therefore treated the eggs and embryos of *Ciona intestinalis* with solutions of chromomycin.

The Table summarizes the essential findings on unfertilized eggs, fertilized eggs and embryos.

These results show that the embryos become very sensitive to the action of the drug at the *late gastrula stage*, when a treatment of 1 h only is very effective. The effect, i.e. the abnormality in the larva, is very striking in the tail, which is much shorter than that of the normal larva. In addition, movement of the tail is very feeble and the larva is incapable of swimming. It therefore remains lying on the bottom of the culture dish. The sensory organs (visible as a pair of black dots in the normal larva) are also strongly hit, being fused and/or reduced in size. Further, the chordal cells are abnormally large, i.e. the process of cell division and differentiation has been blocked at an early stage.

	Concentration/ml	Period of treatment	Result
Unfertilized eggs	5–10 γ	3–5 h	No effect, i.e. normal larvae after fertilization
Fertilized eggs	10 γ	3 h	No effect
Embryos up to middle gastrula stage	3–5 γ	3 h	No effect
Late gastrula stage	3–5 γ	3 h	Marked effect, i.e. abnormal larvae
Late gastrula stage	10 γ	1 h	Marked effect
Late gastrula stage	10 γ	15 min	No effect

The effects of a certain substance on the development of an embryo is always difficult to interpret because the embryo is a unity in a dynamic state of continuous change, morphological as well as biochemical. Further, it is not known whether the substance is really specific or not. Chromomycin may have various non-specific actions but the supposition that it blocks RNA (including informational RNA) synthesis fits well with our results. We know that at the late gastrula stage protein synthesis is markedly evident and it is therefore quite likely that at this stage, RNA synthesis or the 'delivery of information' is much enhanced. If we accept this view, our results will mean that the system for releasing 'information' is not active in the unfertilized or early fertilized egg[4].

The details of this investigation, including a discussion on the permeability of eggs and sequential release of MRNA[5], will be published in Acta embryologiae et morphologiae experimentalis[6].

Riassunto. È stata studiata l'azione della cromomicina sulle uova di *Ciona intestinalis* (Ascidie) in diversi stadi di sviluppo. Essa non esercita alcun effetto sull'uovo vergine o appena fecondato; modifica invece notevolmente la morfogenesi se il trattamento è portato sulle uova in gastrulazione. I risultati vengono spiegati ammettendo che la cromomicina esercita la stessa azione che la actinomicina D e cioè inibisce la sintesi del MRNA.

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