sea water is approximately 1.07 osm[9] and the sodium concentration of the Gulf sample used was found to be 480 meq/l, it can be seen that these animals can produce a urine more concentrated than sea water in terms of both osmolality and sodium concentration. Even while drinking tap water the IHB mice produced urine of greater osmolality than sea water. Twenty-four h urine samples were collected from 8 IHB mice drinking tap water and were found to have mean osmolality and sodium concentration values of 1.47 ± 0.26 osm and 196 ± 23 meq/l respectively. These findings support those of THUNG[10], who reported high concentrations of nitrogenous materials in the urine of mice.

Although several water conservation mechanisms must be utilized by these animals, the extensive urine concentrating capacity of their kidneys appears to be the most significant factor in their survival on the test diet. Lack of diarrhea also must be considered as an important factor[11,12].

Résumé. Deux espèces de souris (IHB et A) vécurent 1 an avec un régime d'eau de mer ad libitum et d'aliments secs. La haute osmolarité urinaire, la capacité élevée de concentrer le sodium et l'absence de diarrhée furent des facteurs qui leur permirent de supporter ce régime expérimental.

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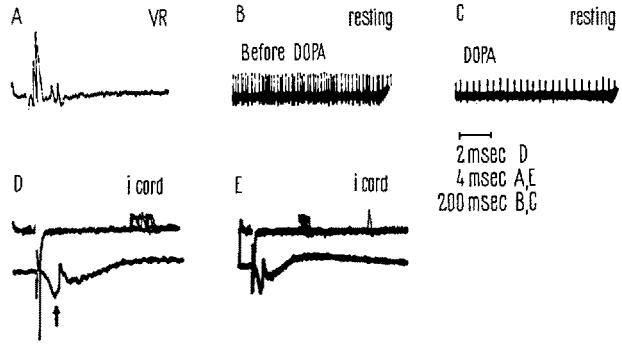
Monosynaptic Control of Static γ-Motoneurones from the Lower Brain Stem

The lower brain stem exerts monosynaptic excitatory control on one group of spinal γ-motoneurones while another group is not influenced[1]. This investigation has been undertaken to show whether this division is identical with the known subdivision in dynamic and static γ-motoneurones[2].

The experiments have been carried out on anaemically decorticated, unanaesthetized cats. Single γ-efferents were isolated in peripheral nerve filaments to flexor muscles in the hindlimb as described in a previous paper[3]. The lower thoracic cord was transected and the dorsal columns removed. The ipsilateral ventrolateral funicle was dissected and mounted for stimulation as well as ipsi- and contralateral nerves.

The γ-efferents were identified as dynamic or static by their difference in reflex behaviour and spontaneous activity before and after an i.v. injection of DOPA[3,4] which modifies the spinal reflex patterns[5,6] presumably by liberating NA from the terminals of descending noradrenergic fibres. Dynamic γ-motoneurones are spontaneously active before DOPA[3,4,7] but either not, or less active after[3,4]. On the contrary, static γ-motoneurones increase their resting activity after DOPA[3,4,8].

In the Figure 2 γ-efferents in 1 filament to the tenuissimus muscle are shown identified as conducting within the γ-range (A) on stimulation of the intact ventral root. The larger diphasic unit is spontaneously active before DOPA (B) but not after (C) and is thus a dynamic γ-motoneurone[3,4]. The smaller clubbed fibre is spontaneously active only after DOPA (C) and thus of the static type[3,4]. By stimulation of the ipsilateral ventrolateral funicle (D, E) the static γ-motoneurone can be activated with short latency but not the dynamic. The segmental latency is calculated by subtracting the peripheral conduction time in the efferent from the latency measured from the onset of negativity of the descending volley (arrow) recorded on cord dorsum (lower trace in D); it is in this case 1.2 msec. This latency is of course of longer duration than the one obtained by intracellular recording which is



Activation of a static γ-motoneurone after stimulation of the ipsilateral ventrolateral funicle of the spinal cord. Upper traces are recordings from a filament to the tenuissimus muscle containing 2 γ-efferents, identified as conducting within the γ-range by stimulation of the intact ventral root of L6. L7 and S1 ventral roots are cut. Spontaneous activity is illustrated in B before and in C 15 min after an i.v. injection of DOPA (100 mg/kg). Only the larger, diphasic unit is spontaneously active before DOPA (B), and only the smaller, clubbed one (static) after (C). D and E show the effect of single shock stimulation of the ipsilateral, ventrolateral funicle at lower thoracic level, recorded at 2 different sweep speeds (superimposed traces). Lower traces in D and E are from the cord dorsum at L6 segmental level. The onset of negativity in the descending volley is indicated by an arrow in D. Only the small unit is activated at a short latency by this stimulation.

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of the order of half a msec[1,9]. The difference can be accounted for by the conduction time from the motoneurone to the point of stimulation of the ventral root, which in this case can be approximated to 0.4 msec and the initiation time of the action potential which is more difficult to evaluate but can be expected to vary between 0.3 and 0.9 msec[9].

The material consists of 6 dynamic and 15 static γ-motoneurones. None of the dynamic γ-motoneurones were activated by stimulation of the ipsilateral ventrolateral funicle, but all static were, with a segmental latency varying between 1.0 and 1.6 msec in 10 cases and longer for the 5 others. These values show that the activation of static γ-motoneurones at least partly is monosynaptic. No short latency (below 10 msec) discharge has been found in the dynamic γ-motoneurones. It is reasonable to interpret the absence of descending effect on dynamic γ-motoneurones on stimulation of the lower thoracic cord as if no monosynaptic excitatory effect from the lower brain stem[1] is evoked in this type of γ-motoneurones. Our conclusion that this monosynaptic control from the lower brain stem is exerted on static γ-motoneurones does not exclude additional pathways, propriospinal or from other supraspinal regions with monosynaptic connection to static γ-motoneurones.

The monosynaptic connections to motoneurones are evoked from 2 regions in the lower brain stem: the Deiters' nucleus to extensor α-[10] and γ-motoneurones[1,9], and the medial part of the lower brain stem to flexor α-[11] and γ-motoneurones[1,9]. The present experiments were made on flexor γ-motoneurones. Hence the descending pathway with monosynaptic connection to the static γ-motoneurones investigated originates from the latter medial brain stem region. However, it is suggested that also the monosynaptic effect from Deiters' nucleus is evoked in static γ-motoneurones. The reason for this suggestion is the similarity in functional organization of the 2 systems revealed by previous investigations[10–13].

CARLI, DIETE-SPIFF and POMPEIANO[14,15] have recorded acceleration of group II afferents extensors on stimulation of the Deiters' nucleus. This means that static γ-motoneurones are accelerated[16,17] from this region. By afferent recording, it is not possible to decide whether a connection is monosynaptic, but it seems to be of short latency and to have comparatively little susceptibility to anaesthesia.

Résumé. Nous avons enregistré, dans les nerfs de muscles fléchisseurs, l'activité de neurones γ uniques, identifiés comme dynamiques ou statiques par leur comportement sous l'effet d'une injection i.v. de DOPA[3,4]. La stimulation du cordon antérolatéral ipsilatéral de la moelle, au niveau thoracique, a invariablement activé les neurones γ statiques. Dans 10 cas sur 15, la latence a été brève, indiquant une connexion monosynaptique. Par contre, les neurones γ dynamiques n'ont pas présenté d'activation dans ces conditions. Ces résultats permettent d'identifier à des neurones γ statiques la fraction de neurones γ recevant une connexion monosynaptique à partir de la région bulbaire[1].

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Failure of the Pineal Body of Two Species of Birds (*Coturnix coturnix japonica* and *Passer domesticus*) to Show Electrical Responses to Illumination

While we were investigating the pineal body of the Japanese quail (*Coturnix coturnix japonica*) for evidence of direct responsiveness to light, a report by MORITA[1] appeared which described attempts to record electrical responses from the pineal of the pigeon (*Columbia livia*) to light. Direct illumination of the pineal or of the lateral eyes did not produce any electrical activity related to the onset or cessation of light. We have obtained similar negative results with the Japanese quail and English sparrow.

The pineals of a total of 25 quails, males and females, ranging in age from 7 days to 6 months, were prepared for electrical recording by a variety of techniques: (1) Birds were anesthetized with Nembutal, placed in a stereotaxic device and the exposed pineal was penetrated at various sites with tungsten microelectrodes. (2) Birds were decapitated, the pineal was dissected from the brain, placed in saline on a wax block, and then impaled by tungsten microelectrodes; the saline was drawn off and the preparation was covered with oil. (3) Pineals dissected in the manner just described were placed on a set of parallel tungsten wires for external recording and covered with oil. (4) Birds were decapitated, the top half of the head was removed by a coronal section, the cortex and cerebellum where then dissected away leaving the pineal attached to the meninges which adhered to the skull; the wick of a silver-silver chloride electrode (light shielded) was attached to the end of the pineal stalk, and an indifferent electrode was inserted into the meninges. (5) Tungsten wire, hook electrodes were placed under the stalk of pineals prepared as just described. A tungsten lamp in an illuminator equipped with a camera shutter

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