Net heat loss to the surroundings during the sleep period and during wakefulness in similar environments

Sleep state	Net heat loss rate	Dry-bulb temperature (°C)		
		33	35	37
Awake	Mean (W/m^2)	46	47	50
	Standard deviation (W/m^2)	2	5	5
	Coefficient of variability (%)	6	9	10
Asleep	Mean (W/m^2)	36	47	59
	Standard deviation (W/m^2)	12	18	21
	Coefficient of variability (%)	33	38	35

be that metabolic rate is depressed during active sleep, and the depressions in evaporation are reactions necessary if thermal balance is to be maintained. However, metabolic rate (as determined by measurements of oxygen consumption) is in fact higher during active sleep than during other stages[9]. A more likely explanation is that in these experiments, as in similar previous experiments with an awake subject[10], the fluctuations in mean body temperature which result from fluctuations in heat transfer simply were not reflected in rectal temperature and mean skin temperature. The poor correlation between mean body temperature measured calorimetrically and the temperature of individual anatomical sites is well known[11,12], and it appears to be mean body temperature with which human thermoregulation is concerned[11,13]. One can conclude therefore that, at least for this subject, thermoregulation is considerably less precise during sleep than during wakefulness even though the imprecision does not result in gross fluctuations of rectal or skin temperature.

If, as it would seem, active sleep and precise thermoregulation are mutually exclusive, sweating being depressed during the active state, then active sleep might disappear entirely in sufficiently warm environments. The ultimate consequences of the conflicting requirements of sleep and thermoregulation under heat stress remain a matter for further experimentation[14].

Zusammenfassung. Eine Versuchsperson, im Calorimeter für Menschen einer warmen Umgebung ausgesetzt, zeigte auffallend grosse Unterschiede in der Schweissrate im Schlaf gegenüber dem Wach-Zustand. Perioden mit unterdrücktem Schwitzen waren mit aktiven (REM) Schlaf verbunden.

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Stimulatory Effect of *Leonurus artemisia* (I-Mu Ts'ao) on the Contraction of Human Myometrium in vitro

Leonurus artemisiae (Lour.) S.Y. Hu is an annual herb of the Labiatae family. As its Chinese trivial name 'i-mu ts'ao'[1] implies, it is frequently used by the lay people as a cure in obstetrical and gynecological disorders, e.g. to stop postpartum hemorrhage and to expel dead foetus or placenta. As an emmenagogue, it is consumed as a simple decoction prepared from 10–20 g dry leaves in each dose. Usually 2-3 doses can be very helpful. The therapeutic values of 'i-mu ts'ao' are documented in a wealth of classical and modern medical literature. The consensus points to the fact that 'i-mu ts'ao' extracts can stimulate uterine activity. The effective compound is believed to be an alkaloid called leonurine[2–6].

It is well known that the effect of different uterotonic agents varies with the species studied, the dosage used and the hormonal regime of the experimental subject[7–9]. Thus it is desirable to confirm the stimulatory effect of leonurine preparations in in vitro studies of human myometrium. 'I-mu ts'ao' dry plants from local sources were extracted with acidic methanol according to Hayashi[10]. The crude extract contains several Dragendorff-positive substances of which two are identified as free choline and stachydrine[3].

[1] Literally, the motherwort.
[2] See for example Li Shih-chen, *The Compendium of Materia Medica* (1576).
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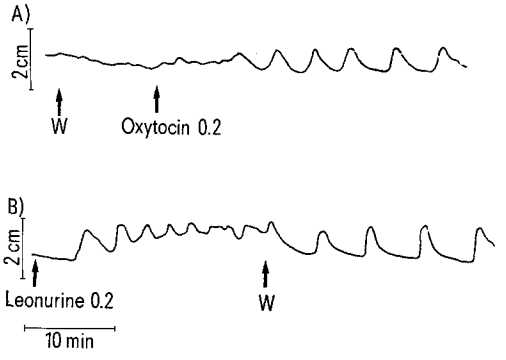
Myometrium samples were removed from excized uteri from patients after undergoing total hysterectomy. They were kept in cold Hank's medium (plus glutamine) and used within 2–3 h. From each individual uterus, one myometrium sample of 2 cm long and 3 mm in diameter was prepared and mounted in a standard organ bath with 30 ml Tyrode's solution. The organ bath was maintained at 37 °C and constantly gassed with 95% O_2: 5% CO_2. Uterine contraction was registered on an electric kymograph through a frontal lever at $2^1/_2$ magnification.

Human myometrium responds to acetylcholine (10^{-4} *M*) with an increase in tone. Individual contractions are small in amplitude and slow in rate. Oxytocin (7 mU/ml) produces more or less regular contractions of large amplitude and relatively stable tonicity (Figure A). The effects of both acetylcholine and oxytocin disappear after washing the sample with 3 changes of Tyrode's solution. Leonurine preparation, as little as 0.1 ml, can produce prominent uterine contraction shortly after application. The individual contractions are large in amplitude and they persist with a remarkably regular rhythm. A higher dose level only raises the basal tone which gradually approaches peak tension. But unlike acetylcholine and oxytocin, leonurine-induced contraction reappears after repeated washing with the same amplitude and regularity. This coincides well with observations in rat and rabbit uteri[3] (Figure B).



A) Contraction of human myometrium in vitro after application of 0.2 ml oxytocin (7 mU/ml). The myometrium was previously treated with acetylcholine (10^{-4} *M*) and then washed with 3 changes of Tyrode's solution. This tissue sample came from a patient suffering from cervival carcinoma. The drum ran at a linear speed of 0.3 cm/min. B) The same myometrium sample as in Figure A after application of 0.2 ml (10 g dry wt./ml) leonurine preparation. A transitory inhibitory period was observed in most cases following leonurine application. Note the appearance of large rhythmic contractions even after washing with 3 changes of Tyrode's solution.

It is difficult to estimate how much the patient's hormonal regime can affect the uterine response to leonurine preparations. For a total of 12 samples from individual patients, only 4 did not respond to leonurine preparation. These 4 samples were from patients well beyond menopause. In order to extract other common factors from the 8 positive samples, further experiments with human and animal uteri must be carried out under a controlled hormonal regime. The present evidence is sufficient to confirm the positive uterotonic effect of leonurine preparation on human myometrium in vitro, as is observed in rat and rabbit uteri[3]. This offers a pharmacological basis to exploit the therapeutic effect of leonurine preparations in human cases.

Unlike other uterotonic agents, e.g. oxytocin, which must be administered by i.m. or i.v. routes under a physician's supervision, leonurine preparations can be applied by the oral route without prescription. Thus it guarantees a popularity basis if the uterotonic property of leonurine preparations can be applied in other aspects of reproductive physiology. One aspect that deserves immediate investigation is an acceleration of ova passage in the fallopian tube or an increase in pre-implantation uterine activity that may lead to antifertility consequences.

Résumé. Leonurus artemisiae, l'agripaume chinoise, est applicable comme émmenagogue selon une tradition millénaire chinoise. L'élément efficient est la léonurine. L'extrait de léonurine par l'alcool méthanolique acidifié a un effet stimulant dans la myométrie humaine in vitro.

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Identification of Antennal Chemoreceptors of the Mosquito, *Aedes aegypti*: a Correction

The antennal chemoreceptor sensilla of the yellow fever mosquito, *Aedes aegypti*, have been described by several investigators[1–4]. There was general agreement on the identification of the sensilla based on their morphology, i.e., 2 types of sensilla trichodea: a long (50–60 µm), tapered, sharp-tipped sensillum (A1) and a shorter (16–40 µm), blunt-tipped sensillum (A2); and a sensillum basiconicum, a short (6–20 µm), thorn-shaped peg (A3). None of these investigators reported finding the sensilla coeloconica seen on the antennae of other mosquitos. LACHER[5] reported finding another type of sensillum that he described as a small (5.5–8.5 µm) blunt peg and identified it as A4 sensillum. MCIVER[6] has since reported finding 3 subtypes of the short sensilla trichodea (A2); 1 was short with a pointed tip and 2 were slender, blunt-tipped forms. Depending on the orientation of the 3 types, they are not always distinguishable using light or scanning electron microscopy. More recently, a sensillum coeloconicum was found on the antennae of *A. aegypti*[7]. Neither MCIVER[8] nor MAYER[9] have been able to locate the A4 type sensillum described by LACHER.

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