An Annual Meeting of Professional
Research Scientists

Experimental Biology 95™
Atlanta, Georgia
April 9-13, 1995

ABSTRACTS 1-3621

2271

HORMONE EFFECTS BY ELECTRONIC TRANSMISSION. M.Citro*, P.C.Endler**, W.Pongratz***, C.Vinattieri', C.W.Smith", J.Schulte"'
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Molecular bio-information may be transduced via water (1-3) and exert bio-activity even when the water is within hard-glass vials (4). This may be transferred by means of an electronic device (5) and hence inhibit amphibian metamorphosis (6). Vials of thyroxine (T) (1 mM) or water (W) were placed on the input coil of a special amplifier (linear from DC to HF). Water vials (WT, WW) were placed for 4 min on the output coil. WT or WW was added to the basin water of Amphibian larvae *R. temp.* at a 2-legged stage (2). Cumulative statistical frequencies of 4-legged stage F_a and of reduced tail F_b were evaluated at intervals of 8 h (6). The experiment was now repeated in two laboratories (A, I). WT: $N_{animals} = 468$; WW: $N_a = 468$. $F_{a,b}$ were (%, mean ± 1 SD):

	WT1	WW1	WT2	WW2	WT3	WW3	WT4	WW4
F_a:	31±12	44±11	53±12	66±13	65±12	80±15	77±13	89±11
F_b:	27±11	43±13	37±12	52±12	49±14	63±09	62±16	73±09

1-4, depending on the experiment: intervals of 8-80 h. Comparison WT *vs* WW, $p<0.001$ in chi-square test and t-test. Data also significant in "survival analysis".

Diluent water (and other polar) molecules may undergo phase coherent oscillations through radiation coupling (7), that are speculated to induce electron propagation (2).

(1) Benveniste et al. FASEB J. 1991,5:A1008; A1538. 1992,6:A1610; Youbicier-Simo et al. Int.J.Immunotherapie 1993,IX:169; Endler et al. J.Vet.Human Tox. 1994,36:56. (2) Endler and Schulte, Dordrecht: Kluwer 1994. (3) Smith. Neural Network 1994,3:379. (4) Van Wijk, Smith in Ref. 2; Endler et al. FASEB J. 1994,8:A400. (5) Aissa et al. J. Immunol. 1993,150:A146; Benveniste et al. FASEB J. 1994,8:A398. (6) Citro et al. in Ref. 2. (7) Del Giudice and Preparata Phys.Rev.Lett. 1988,61:1085; Aissa et al. FASEB J. 1993,7:A602; Del Giudice in Ref 2. (Supported by Brügemann Institute, FRG.)

Biosensors or Chemical Communication, ... (to be decided by the program committee)

Transmission of hormone signal by electronic circuity.

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Previous studies suggest that molecular signals may be transduced by electromagnetic fields via adjacent polarized water dipoles (1). It was shown that biomolecular signals can be transferred using an electronic device (2). Sealed vials of thyroxine (T) (1 mM) or water (W) were placed on an electromagnetic coil connected with the input of a specially designed amplifier. The machine was turned on and sealed water vials WT and WW, respectively, were placed on the output coil. Amphibian larvae (Rana temporaria) at the two-legged stage (Gosner 31 -3-) were exposed to WT and WW and the transitions from the two-legged tadpole stage to the four-legged stage (A) and to the stage with reduced tail (B) were evaluated. (A) The cumulative frequency of animals that had reached the final stage, which was measured at 4 previously defined measuring points at time 1-4, was reduced by up to 11% (A) and 28% (B), compared to the control group (WT: N=54; WW: N=54).

	WT_1	WW_1 %	WT_2	WW_2 %	WT_3	WW_3 %	WT_4	WW_4 %
(A)	27.8	35.2	63.0	74.1	74.1	79.6	81.5	87.0
	±1.1	±1.7	±1.7	±0.6	±2.2	±2.2	±2.4	±0.6
(B)	14.8	11.1	27.8**	55.6	55.6	63	81.5	83.3
	±1.7	±1.1	±1.1	±3.7	±1.9	±1.7	±1.7	±1.1

%, mean ± SEM. **, $P < 0.001$ in chi-square test. This distinct slowing down of metamorphosis was also observed at intermediate points in time. That an electronic amplifier device can be used to transmit molecular signals (4) could give new insights in molecular signalling and lead to new therapeutic approaches.

(1) Eur.J.Pharmac. 1987, 135: 313; Int.J.Immunotherapy 1987, III: 191; Phys.Rev.Lett. 1988, 61: 1085; FASEB J. 1991, 5: A1008; 5: A1583 (abs); FASEB J. 1992, 6: A1610 (abs). (2) FASEB J. 1993, 7: A602 (abs); J. Immunol. 1993, 150: 146A. (3) Herpetologica 1960, 16: 183. (4) Fröhlich in Gutman /Keyser, London: Plenum 1986; FASEB J. 1993, 7: A602 (abs).

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Poster presented at
Am. Ass. Adv. Science Meet. 93
BOSTON, 6-10 Aug. 93

Transmission of hormone signal by electronic circuity

By: M. Citro; W. Pongratz; P.C. Endler

Poster presented at "Science Innovation 93", a meeting of the American Association for the Advancement of Science, Boston, August 6-10, 1993.

Previous studies suggest that molecular signals may be transduced by electromagnetic fields via adjacent polarized water dipoles (1). It was shown that biomolecular signals can be transferred using an electronic device (2). Sealed vials of thyroxine (T) (1 mM) or water (W) were placed on an electromagnetic coil connected with the input of a specially designed amplifier. The machine was turned on and sealed water vials WT and WW, respectively, were placed on the output coil. Amphibian larvae (Rana temporaria) at the two-legged stage (Gosner 31 -3-) were exposed to WT and WW and the transitions from the two-legged tadpole stage to the four-legged stage (A) and to the stage with reduced tail (B) were evaluated. (A) The cumulative frequency of animals that had reached the final stage, which was measured at 4 previously defined measuring points at time 1-4, was reduced by up to 11% (A) and 28% (B), compared to the control group (WT: n=54; WW: n=54).
(%, mean ± SEM. **, $p < 0,001$ in chi-square test.
This distinct slowing down of metamorphosis was also observed at intermediate points in time. That an electronic amplifier device can be used to transmit molecular signals (4) give new insights in molecular signaling and lead to new therapeutic approaches.

References

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FASEB J.; 1993, 7: (A602)

	WT1	WW1 %	WT2	WW2 %	WT3	WW3 %	WT4	WW4 %
(A)	27.8 ± 1.1	35.2 ± 1.7	63.0 ± 1.7	74.1 ± 0.6	74.1 ± 2.2	79.6 ± 2.2	81.5 ± 2.4	87.0 ± 0.6
(B)	14.8 ± 1.7	11.1 ± 1.1	27.8 ± 1.1	55.6 ± 3.7	55.6 ± 1.9	63 ± 1.7	81.5 ± 1.7	83.3 ± 1.1

Summary of a clinical trial

Effect of Arnica D30 on hard physical exercise.
Tveiten, D., Bruseth, S., Borchgrevink, C.F. & Lohne, K., Tidsskr. Nor. Laegeforen., 111 :3630-3631 1991.

The article was published in Norwegian but had an abstract in English, which you can find here.
The effect of Arnica montana on stiffness, restitution time and cell damage during hard physical exercise was evaluated in a randomized double-blind trial during the Oslo Marathon. 36 participants were randomized: one group received Arnica D30 five pills twice daily for five days, starting the day before the event. The other group received placebo pills. Blood tests were carried out before and immediately after finish, and after 48 and 72 hours. Stiffness was evaluated on a visual analogue scale after finish and on the next three days. There was no difference between the groups as regards glutamate-oxale acetate-transaminase (GOT), glutamate-pyruvate-transaminase (GPT), lactodehydrogenase (LD), creatinine, haptoglobin or magnesium. Creatinine Kinase increased in both groups, but to a higher level in the placebo group. The difference was greatest on the second day (p=0.07). A feeling of stiffness was more pronounced in the placebo group on all four occasions (p=0.06 and 0.07 on day 2 and 3). There was no indication that Arnica D30 reduced the time of restitution of stiffness.

Comment

Because of the small number of participants it would be interesting to repeat this study with more participants especially as the differences, though not statistically significant, did certainly show a trend.

The 'HomInt Research and Development Newsletter' (HomInt R&D) is edited by the Documentation department of VSM Geneesmiddelen and Development Department of VSM Geneesmiddelen bv.

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