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Short research communication

Extension of C. elegance Lifespan with Structured Electromagnetic Irradiation

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Abstract

"Biotron-Ekom" is patented universal device relates to antenna technology and can be used for effective transmission of the concentrated radiation from any of a large volume of grass as a source of electromagnetic waves for any volume smaller viable object, in particular a medicine to maintain the vitality of C. elegans. The growing grass was mixture of 50% Trítikum else Secále cereále, Avéna and Zea cultivated under ambient conditions for 12 days. Baskets with growing grass placed between two spherical copper antennas in frontal plane. C. elegans were also placed in between the antennas in their focal zone. So it was expected that the possible electromagnetic radiation structured by baskets with grass would be focused on C. elegans. After C. elegans exposure for duration of the days the viability was counts in the test and control worm groups. The result of experiment was that the viability of tested C. elegans became higher than the control group of worms an average of 16%.

Short research communication

In electromagnetic waves the interaction between the incident energy and molecules of the organism (mainly water) occurs mainly as a thermal process. The absorbed photons are

科研简报

以电磁辐射的方法延长 C. 线蠕虫的寿命

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摘　要

″Biotron Ekom″是一种世界通用的、涉及天线应用的专利技术。此技术可用于有效地将浓缩的辐射能以电磁波的方式传输到大面积草坪，并进而影响生活于此草坪中的小生物（尤其是 C. 线蠕虫）的活性。本实验将生长中的草中混入 50% Trítikum else Secále cereále, Avéna and Zea，在同一条件下培育十二天。装草的篮子置于两个球形铜天线在额面之间。线虫也被放置在其震源区天线之间。此设置可望传输到盛草篮子的电磁波将侧重于线蠕虫。线蠕虫在此条件下生活十二天后，我们比较了对照和实验组中线蠕虫的活性。结果发现：实验组线蠕虫的活性比对照组平均高 16 分％。

科研简报

在电磁辐射反应中，入射能量和生物分子(主要是水）的相互作用主要是一个热能产生的过程。吸收的光子在焦耳型处理器绝源体中转换为

transformed to thermal energy in a Joule-type processor dielectric loss. In the case of exposure with intensities less than thermal effects, there are biological effects of electromagnetic fields, but described effects are not scientifically conclusive. Because of this, there is a trouble to prove that they could be a favorable for health of people.

Let us to introduce "Biotron-Ekom" device [1] for electromagnetic waves transmitting from a large volume of growing grass placed in a shielded large volume chamber as a radiation source, means for placing C. elegans as smaller object than the size of the source, and two antennas. The growing grass was mixture of 50% Trítikum else Secále cereále, Avéna and Zea cultivated under ambient conditions for 12 days. C. elegans placed in the common focal area of both antennas. The antennas are made of copper in the form of a truncated spherical surface segments and are mounted against each other in the region of the sphere radius, and the large volume of the radiation source is placed in the plane of the aperture of one of the antennas.

C. elegans worm culture was obtained from the University of Minnesota [2]. C. elegans cultivations was conducted in 35 mm Petri in strict accordance with the recommendations described in [3]. On the 10th day after the synchronization, C. elegans was placed in “Ekom-Biotron” device as shown in Fig. 1.

热能。 假如光照强度不足以产生热能，人们相信由此产生的电磁场仍可产生某些生物学效应。然而，产生的具体效应是什么，目前尚无科学定论。因此，目前尚难证明这些效应对人类健康有益。

让我们介绍一下"Biotron-Ekom"装置[1]及本实验的大体设计：本实验采用一个可释放大量电磁波的封闭式电池，在两个天线之间，放置盛草的篮子以及 C.线蠕虫。处于生长期的草中混以 50％Trítikum else Secále cereále, Avéna and Zea，将这一混合物置于同一实验条件下培育十二天。C.线蠕虫放置在两个天线的共聚焦点处。两个天线均为横截面为园形的铜制作，安装于同一半径的相反方向。辐射光源放在其中一条天线孔径的同一平面。

C.线蠕虫培养物来自美国明尼苏达大学[2]。 培养在 35 毫米的培养皿中进行。培养方法完全参照所附说明[3] 。同步后第 10 天，C.线蠕虫被放在"Ekom Biotron"装置。放置的具体位置按如图 1 所示 。

Fig. 1. - Shows the location C. elegans culture: 1st group of 11 worms placed at place of "1"; 2nd group of 11 worms placed at place of "2"; 3rd group of 11 worms (control) placed at place "K". Total held 3 sessions of 1 hour for 11-12 day C. elegans culture.

图 1. 3 组培养物的不同位置 “1”: 组 1，11 个 C.线蠕虫； “2”：组 2，11 个 C.线蠕虫； “K”：组 3，11 个 C.线蠕虫. 每天三次，每次一小时，连续 11 到 12 天。

After 3 sessions in “Ekom-Biotron” device, C. elegans culture was counted. The measurement results are shown in Figure 2.

在"Ekom Biotron"设备中经过三次处理后，对各组中线蠕虫的数量进行计数对比。其对比结果如图 2 所示。

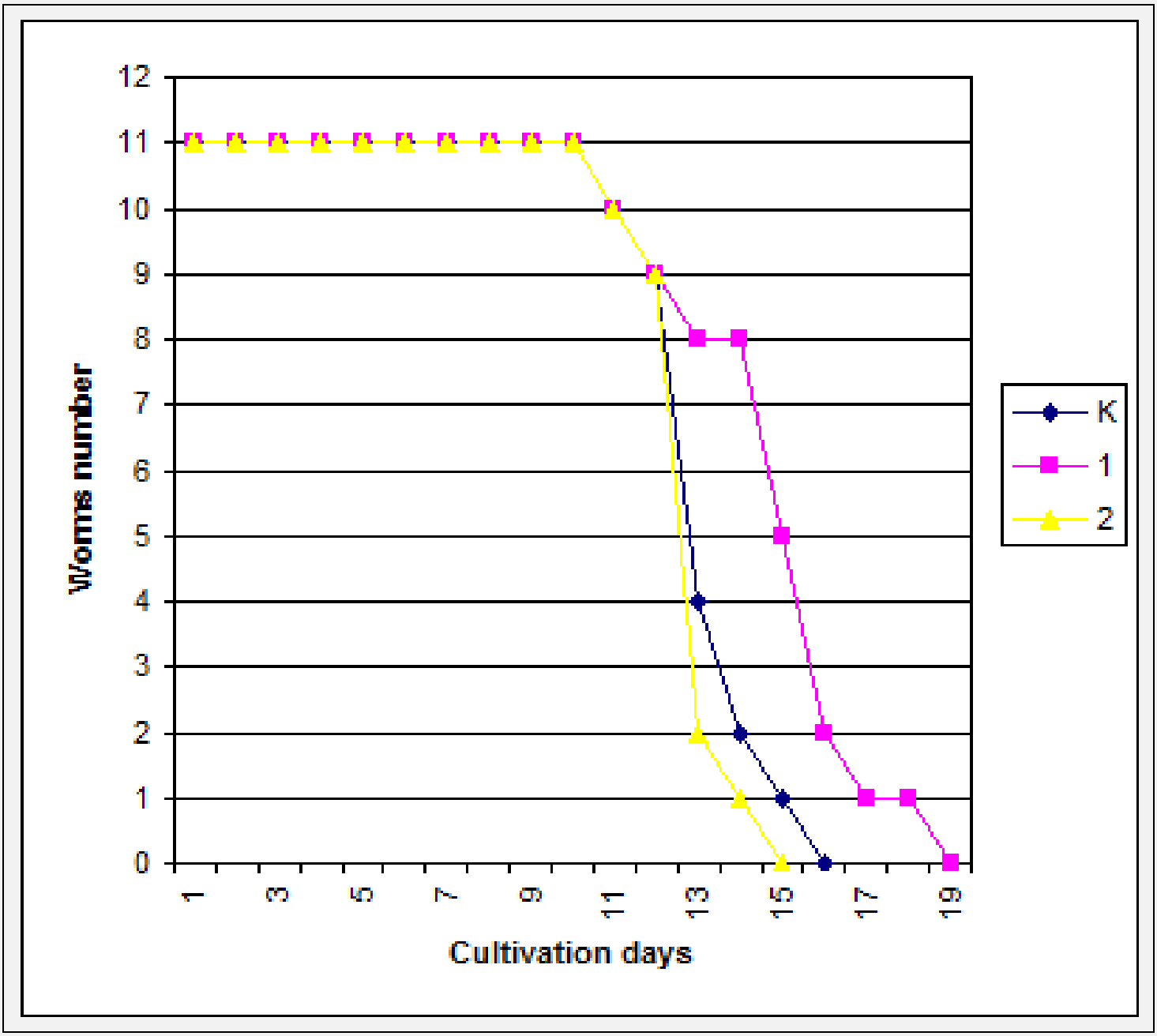

Fig. 2. - 1st group of 11 C. elegans worms placed at place of "1" (focal area) had longer duration of vitality.

图 2. 放置在“1”处的 11 个线蠕虫有较长的活力。

Thus, all parallel baskets with growing grass as radiation source 3 meter long antenna on the spherical portion of the same length within its angular aperture allow forming a bulk focal zone beginning at a distance R/2 from the antenna and a depth at least

因此，三个并行、作为辐射源的草篮在三米长的天线上具有相同的长度。其孔径角内的球面部分允许自 R/2 处起形成散焦区； 此区沿天线方向可至少延伸 16 厘米。 在相同的培养条件

16 cm in the direction of the antenna. The same duration of vitality between 3rd group of worms (control) and 2nd group of worms (experiment) located outside of focal zone proves that concentration of electromagnetic waves from growing grass radiation is the greatest in the region of R/2 from the antenna. From the center of the sphere at a distance from the antenna more than R/2 the radiation would not be concentrated. The result of experiment was that the viability of tested *C. elegans* became higher than the control group of worms an average of 16%.

The electromagnetic radiation presents important part in the environment. The effects for human health are cumulative, and they are not visible in short time. In addition, the standards are based on tissue heating and ignore the evidence of non-thermal effects. Therefore, there are many unknown aspects of the biological effects of the electromagnetic irradiation. We hope that our research will shed light on these issues.

下，虽然组 3（对照组)和组 2 (实验组) 同样位于辐射震源区外，但实验组所在区域从草篮中（辐射源）收到的电磁波最大。由于从天线中传递的电磁波呈圆球型散播， 跨过 R / 2 区域后，从天线中发出的电磁波将无法浓缩或聚焦 （对照组受到的电磁波辐射将远低于实验组）。因此，实验组中 C 线蠕虫的活性平均比对照组高 16%。

电磁辐射在人类生活环境中起着非常的作用。此作用对人体健康是累积性的，而非即时可见的。既往对电磁辐射效应的标准是基于组织产生热能的效应，而忽略非热效应。因此，对于电磁辐射所致的生物学活性问题，目前尚有许多未知之处。我们希望本实验结果将有助于阐明这些问题。

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