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SCHOLARENA

Journal of Forensic and Crime Studies

RESEARCH ARTICLE

ISSN: 2638-3578

Relationship of Compound Rd18 with the Slowing Down of Cadaveric Decomposition

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Citation: Meredith Bonesys JO (2022) Relationship of Compound Rd18 With the Slowing Down Of Cadaveric Decomposition. J Forensic Crime Stu 5: 102

Abstract

The rapid decomposition of bodies and the difficulty of postmortem processes are a major problem for forensic experts. This problem prevents the early detection of substances ingested or administered to the victim and therefore a delay in time to obtain reliable results. That is why in this article we present a species found in Costa Rica, specifically in the Guachibil jungle where a tribe of shamans showed us the properties of this species Ramitus erchencensis Bonesys,2019. This species secretes a polysaccharide that, when applied to human tissues, increases their resistance to decomposition, facilitating the work of forensic services.

We wanted to determine the effectiveness of the substance RD18 in the application in human beings so that the bodies do not decompose so fast and to be able to find more easily the substances or evidences for which they died.

A relationship was established with the R.erchencensis specimens and the RD18 compound was extracted from the young specimens in a non-invasive way by means of a light superficial scraping and after analyzing it with the Quality technique (approved by Dr. Lua Lowx) it was applied in corpses in different stages of decomposition.

The results were the higher the concentration of the RD18 substance, the more exponential growth is observed in the decrease of the time prior to the decomposition of the corpse.

In corpses found several days after death, the RD18 compound helps to detect substances in the body that, with current techniques, would go unnoticed, such as scopolamine, morphine, etc.

Keywords: Invertebrates; Decomposition; Cadaveric Fauna; Post Mortem Time

Introduction

The rapid decomposition of bodies is a challenge that every forensic scientist must face in his work to clarify the facts of the death of the victim, in fact, constantly working against the clock. That is why this profession has not stopped looking for a solution to this problem [1].

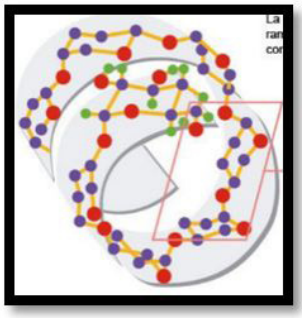
It is estimated that 83-90% of the cases information is lost due to rapid decomposition, more frequent in bodies subjected to death through chemical elements (5:1). It is important to mention that up to 75% of the time it takes longer to know the cause of death. [2]

This issue is a constant challenge for all branches of science. In this research article we show an exhaustive analysis and reliable conclusions of a new compound that has great results [3]. A relatively recent review put us on the track of what was the most appropriate area to collect samples.

The need to discover any component that would allow us to elaborate a chemical has taken us to unsuspected places. So much so, that on our trip to the Guachibil jungle in Costa Rica we were able to make a great discovery in this regard. In this jungle we were guided by the tribe of shamans and found a creature, hitherto unknown, which we will call Ramitus erchencensis. This creature is an invertebrate from the genus Ramitus although with differences, this one is created with vegetation whose behavior caused us great curiosity. The members of the tribe had superhuman abilities that allowed them to survive all kinds of adversities, and when they died the bodies remained intact for up to a week after death, this helped them to perform their postmortem rituals. [4,5]

Method

Due to the difficulties of the terrain and the complexity of establishing relationships with the subject R. erchencensis we had to create lines of approach and subsequent specimen collection. After 2 months accompanied by the local people we achieved a complete approach and the subsequent possibility of setting up our camp next to the specimens. It should be noted that a cordial relationship was achieved with them and they did not suffer any mistreatment at the time of sample collection [6]. Polyssacharide RD18 By means of photographic cameras we made a visual guide of each specimen and managed to capture, for later researchers, the colonies of Ramitus, the different generations and the types of vegetation that conformed them, creating a quality entomological guide.



All our work was recorded in the corresponding CRDs and the sampling was carried out on the youngest specimens since the substance was found to be more abundant.

R.erchencesis spp Bonesys, 2019 (Raminus, Raminiaera) is a monophyletic genus composed of 5 species distributed in Africa and Asia (Ucher 2007). These invertebrates are commonly called branches because of their large size. In warm regions the males are usually in diapause; however, we have observed that at the same temperatures the females show a different behavior.

Females when excited secrete a velvety substance in their bark, which has great properties. This substance contains a large amount of polysaccharides and proteins, in particular substance RD18. This substance is a polysaccharide formed by chains of alpha glucoside, delta afterigine and beta zamorines that through reduction and oxidation reactions produce adenosine triphosphate (ATP) necessary to maintain the body temperature and the flow of electrons for a good maintenance of the carcass [7].

The sample was collected with a soft bristle brush and then placed in hermetically sealed bags to facilitate transport to the nearest laboratory in our network without the climate of the location deteriorating the sample [8]. In this case, the samples were analyzed at the Forensic Institute Laboratory complex in Miami. A large collection of substance was performed. First, by centrifugation, RD18 was separated from other products secreted by the specimens.

After that, using the Quality technique (approved by Dr. Lua Lowx) [9], the substance was homogenized and an optimal concentration was obtained for testing the human cadaveric samples.

In order to dilute the substance and to be able to clarify which concentration was the most optimal for use and to achieve the task that we saw that it could be given, we used a basic and neutral sucrose that does not interfere with the activity of RD18.

All procedures were authorized by the Costa Rican authorities and the World Invertebrate Ethics Committee. Since the samples were taken at the place where the specimens live, using non-invasive techniques and with their permission, no unethical and disrespectful activities were carried out.

A sufficiently representative sample was used to be able to extrapolate the results.

Specimen of Ramitus erchencensis

Results

The higher the concentration of the substance RD18, the more exponential growth is observed in the decrease of the time prior to the decomposition of the carcass. TABLE 1

It can be seen that the corpse is not completely preserved, so decomposition does occur.

Likewise, the compound has also reflected data on substances that do not appear in samples obtained 24-72 hours after its administration in humans. The findings have determined that the RD18 compound increases the chances of detecting the presence of scopolamine, morphine, alcohol, cocaine and ketamine in cadavers, each with a different success rate. Substances in the body that, with current techniques, would go undetected or non-existent after 72 hours [10]. TABLE AND IMAGE 2

Table 1

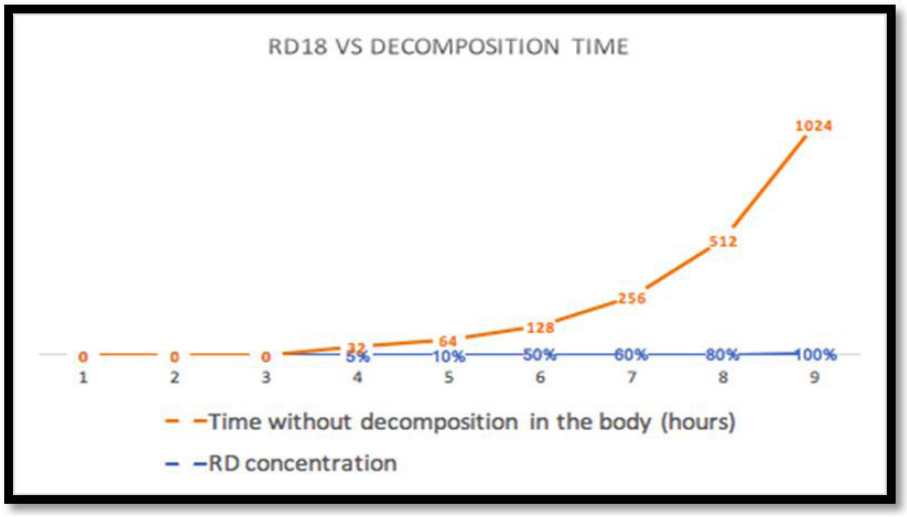
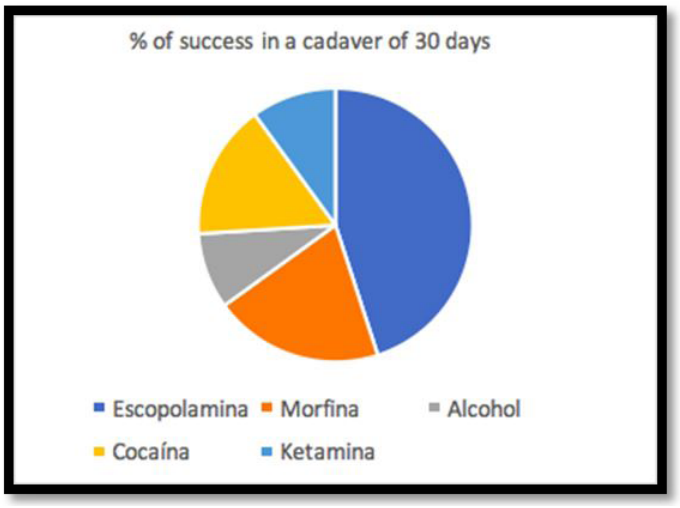


Table 1 and Image 2

% of success in a cadaver of 30 days	
Escopolamina	45 %
morfina	20 %
Alcohol	9 %
Cocaína	16%
Ketamina	10 %



Discussion

It has become clear that we have a great need to determine the nature of death in a short period of time since decomposition plays against the experts if we want to determine certain substances or compounds that degrade rapidly.

In entomology insects play a very important role in estimating the time in which such death occurred, but what about the reason? The present study was conducted to show the time and pattern of decomposition that occurs after the application of RD18 compound. All this was prompted because estimating the post-mortem interval is a challenge for our experts but even more so to determine causes of death against the clock [11].

We know that products such as formalin delays the onset of decomposition but its limitations are high and it has seen more use in the criminal act than in the forensic investigator, which is why RD18, based on the latest studies, has opened a door to hope [12].

As we have been able to verify and read in different articles, there are other techniques to delay decomposition such as embalming, but this would prevent us from analyzing other substances [13]. To clarify this statement with data we exposed three bodies with the same anthropometric and sexual characteristics, subject 1 embalmed, subject 2 unembalmed and subject 3 with the RD18 compound [14].

The post mortem changes of subject 1 slowed down for a few days, those of subject 2 were immediate, the changes of subject 3 took many more days than those of subject 1, with the addition that substances appeared that had been lost with embalming.

This field has many avenues of research and they are already underway, through new sampling and an increase in the number of subjects. All endorsed by the Jamsonian Institute of New York.

Conclusions

With this study we have achieved a breakthrough in forensic entomology. The substance found has given hope to the victims, although a stable and complete preservation of the decomposition is not achieved, the time prior to decomposition has been significantly reduced, facilitating the forensic work.

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