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THE OCCUPATIONAL PHYSICIAN HAS A CENTRAL ROLE IN WORKPLACE HEALTH PROMOTION

An enormous number of articles have been published in Pubmed in the last 5 years (105657 articles). Adding the additional filter "occupational health", the number of articles diminishes to 1017. Besides this high number, reflecting the great interest in nutrition topics in general and workplace nutrition environment, in particular, there is definitely a need to evaluate the effectiveness of workplace interventions.

A systematic review conducted in Europe by Maes et al [1] used a broad criteria for the quality assessment of the interventions: the representativeness of the study population, the allocation bias, the control of confounders, blinding, reliability and validity of the data collection tools and withdrawals and drop-outs. 30 studies were selected and analysed according to the results (anthropometric, behavioural or both) and to the type of intervention: educational, environmental or multicomponent (including for example physical activity programs). Using the above mentioned criteria, the analysis currently showed that there is only moderate evidence of effect on educational and multicomponent dietary interventions found in the workplaces. This conclusion was partially due to little information provided by these articles about the quality of the intervention.

However, this should not restrain the efforts of the occupational medicine team; they should just focus the efforts on better designed interventions and better assessment of the results. A survey conducted in Australia in 55 organizations revealed the most common nutrition barriers [2] and found that these were: "unhealthy food available in office" (30.6%) and "lack of healthy options near office" (28.8%). In order to overcome these barriers, the interviewed persons selected the following nutrition-related activities: personalized diet programs (76.6%), cooking demonstrations (73.0%), weight-loss challenge among colleagues (58.6% vs 30.6%) along with workplace policy support such as having a well-equipped kitchen at work (91.0%) or a free box of fruits provided in the kitchen (87.4%). But even with optimal staff and resources, current workplace health promotion programs report a dropout rate between 40-60%, that makes them quite ineffective [3].

In the current edition of our journal, dr. Laurence Plumey, nutritionist consultant and teacher at the School of Dietetics in Paris, gives us some practical solutions for our day by day encounters during the occupational medicine consultation. Dr. Plumey created a nutrition school for health professionals (including a special training for occupational physicians) and wrote several nutrition books. She has a great experience in weight reduction management. We hope that her advices will raise the interest for you to include nutritional advices in your activity, as part of the health promotion activities conducted during the annual medical examinations. There is no universal success recipe for work promotion programs, as we mentioned, but there are many suitable individual solutions and you may have very good results if you will apply them.

We know very well that occupational medicine is not only about the cure, but mainly about prevention and about improving the quality of life. Improving the quality of life of the employees refers, of course, to

prevention and early detection of occupational diseases but also to education, health promotion and screening for the common non communicable diseases. The obesity epidemic in Romania represents 31.6% in urban and 21.7% in rural population [4]; it is one of our major national health concern, therefore all actors in the medical field should join efforts to reduce this prevalence. The occupational physician has a central role in workplace health promotion; it is why we have to develop our knowledge about nutrition related issues and discuss them as professionals during our medical consultations.

Marina Oţelea

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HORAIRES DE TRAVAIL DECALES : QUELS RISQUES ET QUELS CONSEILS NUTRITIONNELS DONNER AU SALARIE

Laurence Plumey[1]

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Rezumat: *Munca de noapte este un important factor de stres pentru lucrător, pentru că realizează perturbarea ritmului veghe–somn. Articolul prezintă sfaturi nutriţionale şi de igiena, documentate ştiinţific care să minimizeze acest risc.*

Resume: *Le travail de nuit peut être considéré comme un stress car le cycle veille /sommeil n'est plus en phase avec l'environnement. Chaque rythme circadien va essayer de s'adapter à ce nouveau mode de vie, avec plus ou moins de succès. De là dépendront une grande partie des conseils nutritionnels.*

Conséquences du travail de nuit sur la santé et les implications nutritionnelles.

Au niveau hormonal, tout est là pour favoriser la somnolence à partir de 2heures du matin et durant toute la matinée(à partir de 2 heures du matin, le taux sérique de mélatonine remonte et la cortisolémie est au plus bas).

Votre conseil: prendre une collation vers 2h du matin pour lutter contre la somnolence – et de préférence faires ses heures de sommeil le matin, de retour à la maison, plutôt que l'après midi.

Au niveau du métabolisme glucidique et insulinémique, le salarié qui travaille de nuit est en hyperglycémie et en hyper insulinémie, de jour comme de nuit. Chroniquement, ceci augmente le développement d'un état d'insulino résistance, précurseur de diabète et de maladies cardio-vasculaires.

Votre conseil: éviter les sucres rapides pendant la collation, et en règle générale le grignotage.

Au niveau de la santé en général, le travail de nuit augmente le risque de surpoids, de diabète, de maladies cardio-vasculaires (stress, tabac, alcool), de troubles digestifs (digestion plus lente et difficile la nuit), de mauvaise récupération du sommeil (anxiété, troubles de l'humeur, voire dépression).

Vos conseils: garder le rythme des 3 repas (petit déjeuner, déjeuner, dîner) – éviter le grignotage – adopter une collation qui stimule la vigilance et ne soit pas trop hyperglycémiante – surveiller de près les indicateurs de corpulence, les paramètres biologiques et cardio-vasculaires de ces salariés.

Concrètement, conseils au salarié travaillant de nuit.

- **Bien conserver les 3 repas par jour et la collation de la nuit.**

- Le dîner (**entre 18h et 22h)** : repas complet avec une entrée (crudités), un plat principal (viande, poisson ou œufs avec légumes et féculents), yaourt, fruit. Il doit être suffisant pour tenir jusqu'à 2 heures du matin, sans envie de grignotage, mais pas excessif pour éviter la somnolence de digestion.

- **La collation de 2-3 heures du matin :** elle sera riche en protéines (stimule vigilance) et en glucides complexes (peu hyperglycémiants, comme le pain complet, les pâtes, les légumes secs) et pauvre en sucres rapides (sodas, cafés sucrés, bonbons). Eviter le gras qui est beaucoup plus indigeste la nuit que le jour.

- Les bonnes collations : petite salade composée avec crudités, thon, jambon ou oeuf – un yaourt et un fruit / sandwich jambon crudités (sans mayonnaise), yaourt aux fruits, fruit / une part de quiche lorraine, un yaourt, un fruit.

- Les mauvaises collations : sandwich au pâté ou au fromage, barres chocolatées, biscuits, gâteaux, viennoiseries, sodas sucrés, cafés très sucrés.

- Le petit déjeuner (entre 5h et 9h) : attention, c'est le repas le plus souvent sauté. Idéalement, prévoir du café (décaféiné) ou du thé léger, un laitage (yaourt, ou lait), du pain ou des céréales, un fruit ou un jus de fruit.

- Le déjeuner (entre 11h et 14h) : Faire un repas complet avec entrée de crudités, plat principal, laitage et fruit.

En règle générale, éviter de boire plus de 4 à 5 tasses de café par 24h et des sodas sucrés. Il est faux de croire que le sucre maintient éveillé et permet de mieux lutter contra la fatigue.

- **Insister pour maintenir un bon niveau d'activité physique chez le salarié.**

En dehors de sa période récupératrice de sommeil (au moins 6 heures de sommeil), l'activité physique (au moins 1 h de marche par jour, ou du vélo) lui permet de se préserver du surpoids et de ses complications métaboliques et cardio-vasculaires.

Tous ces conseils permettront ainsi au salarié de mieux supporter, physiquement et psychologiquement, le travail de nuit.

L'inégalité des salariés devant le travail de nuit ou en horaires décalés.
Ceux qui supportent mieux le travail que nuit que d'autres sont jeunes, petits dormeurs et plutôt du matin, en bonne santé, sans surpoids, actifs dans la journée et mangeant bien. Ceux qui vivent mal le travail de nuit sont les plus âgés, mangeant mal, étant déjà fatigués (carences), sédentaires, en surpoids avec des complications métaboliques et cardio-vasculaires. Il faut donc les encadrer de près, les voir souvent et bien les conseiller sur leurs comportements alimentaires et d'hygiène de vie.

Y a t'il un rythme idéal pour les horaires décalés ?
Les 3/8 représentent un danger pour la santé des salariés, mais il sera moindre si le rythme suivant est respecté : 4 jours en travail de nuit, repos compensatoire, 4 jours en travail du matin, repose compensatoire, 4 jours en travail du soir, repos compensatoire, 4 jours de travail de nuit …

En conclusion, les salariés en travail de nuit et en horaires décalés doivent être bien suivis médicalement et recevoir des conseils nutritionnels et d'hygiène de vie adaptés. Ceux ci permettront de diminuer le risque de complications métaboliques et cardio-vasculaires. Il en va de la qualité de vie et de santé du salarié.

EXPERIMENTAL STUDY ON THE ALUMINIUM EFFECTS ON ALERTNESS IN MICE

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Rezumat: *Cercetările privind neurotoxicitatea aluminiului au evidenţiat o incidenţă crescută a simptomatologiei neuropsihice la lucrătorii din industria aluminiului şi au fost susţinute de studii experimentale efectuate la şoareci şi şobolani, care au demonstrat alterări neurocomportamentale şi de dezvoltare. Pe baza acestor date, prezentul studiu şi-a propus să evidenţieze influenţa aluminiului asupra activităţii locomotorii la animalele de laborator care au fost tratate cu doi compuşi de aluminiu administraţi în doză unică sau repetată, prin testul „activity-cage" şi testul de explorare simplă. O creştere a activităţii motorii a şoarecilor în aceste teste este apreciată ca un efect stimulant psihomotor, pe când o scădere a acestei activităţi este apreciată ca un efect sedativ. Rezultatele au arătat ca la 30 de minute după administrarea unor doze unice de clorură de aluminiu, respectiv sulfat de aluminiu, s-a înregistrat o scădere a numărului de mişcări orizontale şi verticale efectuate de animalele testate, substanţele având un efect sedativ. Efectul sedativ s-a menţinut la 120 de minute de la administrare doar în cazul şoarecilor care au primit clorura de aluminiu. Probabil că menţinerea efectului sedativ în timp este influenţată de tipul compusului administrat. Este posibil ca în administrare cronică animalele să fi dezvoltat toleranţă faţă de efectul sedativ constatat în administrarea acută, toleranţa fiind un fenomen comun pentru efectul sedativ.*

Abstract: *The research concerning aluminium neurotoxicity showed an increased incidence of neuropsychological symptomatology in workers involved in the aluminium industry and were supported by experimental studies on mice and rats, which demonstrated neurobehavioural and developmental alterations. Using these data, the present study aims to highlight the aluminium influence on locomotion in laboratory animals that were treated with two aluminium compounds administered in a single or repeated doses through the „activity-cage" test and the simple exploration test. An increase in the mice motor activity during these tests is considered as an effect of the psychomotor stimulant, whereas a decrease of the motor activity is considered as a sedative effect. The results showed that 30 minutes after the administration of a single dose of aluminium chloride, aluminium sulphate respectively, a decrease in the number of the vertical and horizontal movements performed by the tested animals was recorded, the chemicals having a sedative effect. The sedative effect lasted 120 minutes only in the mice that had received aluminium chloride. It is likely that the length in time of the sedative effect is influenced by depends on the type of the chemical compound administered.It is possible, as well, that in chronic administration the animals have developed tolerance to the sedative effect noticed in acute*

administration, since tolerance is a typical phenomenon for the sedative effect.

Introduction

The research concerning aluminium neurotoxicity showed an increased incidence of neuropsychological symptomatology in workers involved in the aluminium industry. Coordination difficulties, concentration disorders, headaches, depression, fatigue and peripheral neuropathy have been noticed [1; 2]. The experimental studies performed on mice and rats revealed neurobehavioral and developmental alterations after repeated oral administration of aluminium [1]. Mice are the most sensitive animals to oral administration of aluminium, and it is possible to notice neurobehavioural effects such as a decrease in motor activity, in the intensity of the gripping reaction and of the surprise reaction[3]. After the oral administration of the aluminium compounds in adult mice and rats, a decrease of spontaneous motor activity quantified through the reduced rotarod performances, of the gripping reflex and the alteration of thermal sensitivity were found. Memory and learning deficits were also found after chronic administration of aluminium chlorate or sulphate through gavage [4]. The build-up of aluminium in the brain and the alteration of the aminoacid neurotransmitters are important mechanisms of aluminium neurotoxicity [5].

Starting from the data in the literature and the ones obtained from the experimental study concerning some clinical manifestations of the CNS in the subjects exposed to aluminium as part of their professional activities, which highlighted a series of disorders like sleep disturbances, apathy and asthenia, we aimed to research experimentally the aluminium influence on locomotion in laboratory animals treated with different aluminium compounds administered in a single dose, or for a period of 2 weeks [6].

Material and method

The assessment and quantification of alertness in mice involves behavioural tests which measure different types of movements, such as locomotion, standing on hind legs, smelling, licking, feeding, included under the name of spontaneous motor activity. The experimental models most commonly used to measure spontaneous motility in laboratory animals are the „activity-cage” test and the simple exploration test. An increase in activity in laboratory animals during these tests is considered as a psychomotor stimulant effect, whereas a decrease in the activity is seen as a sedative effect.

The evaluation of motor activity after the administration of single doses of aluminium compounds was performed using the locomotor activity cage. The parameters measured were the number of spontaneous horizontal or vertical movements made by each mouse, and the decrease in the number of spontaneous horizontal or vertical movements made by each mouse was considered an indicator of sedation.

The simple exploration test was used to assess locomotor activity in case of chronic administration of aluminium compounds. The parameter measured was the number of the squaresthe mouse passed through with all 4 paws.

12 albino male mice, weighing 25-35 grams each, were used in the experiments with single dose, and 25 albino male mice in the experiment in which the aluminium compounds were administered for 2 weeks. The animals were supplied by the biobasis of Carol Davila University of Medicine and Pharmacy, Bucharest. The batches of mice were brought to the lab 24 h prior to the onset of the test and were kept in standard environmental conditions, with ad libitum access to water and food. The animals were hosted in plexiglass cages (with sawdust bedding), 12 animals per cage. The environmental temperature was between 21 and 24 °C, and the relative humidity was maintained between 45% and 60%. All the experiments were performed according to the European Directive 86/609/EEC/24.11.1986 and to the Government Resolution 37/30/01.2002 regarding the protection of animals used for experiments or other scientific purposes. The tests took place after the approval of the Ethics Committee of Carol Davila University of Medicine and Pharmacy, Bucharest.

The substances used for the single dose were aluminium chloride 9 mg/kg body weight and 18 mg/kg body weight (Sigma Aldrich), respectively, aluminium sulphate 3.6 mg/kg body weight and 7.2 mg/kg body weight (Sigma Aldrich), respectively; both substances were dissolved in sodium chloride 9‰, in a concentration that would amount the administered quantity to 0.1 ml/10 g body mass. For the control group a saline solution of 0.1 ml/10 g per mouse was used. The aluminium compounds doses were chosen in such a way as to administer 1/5, 1/10 of the $DL_{50,}$ respectively. The tests were performed 30 minutes and 120 minutes, respectively, after the substances were administered by intraperitoneal injection.

The substances used for long term administration were aluminium chloride in a dose of 0.2 mg/kg body weight and (Sigma Aldrich) 1 mg/kg body weight, respectively, aluminium sulphate 0.1 mg/kg body weight and 0.5 mg/kg body weight (Sigma Aldrich), respectively, the substances being dissolved in sodium chloride 9‰ in such a way as to administer 1/5, 1/10 of the $DL_{50,}$ respectively. For the control group a saline solution of 0.1 ml/10 g per mouse was used. The aluminium compounds doses were chosen in such a way as to administer 1/5, 1/10 of the $DL_{50,}$ respectively. All the substances were administered through gavage, twice daily, in the morning and evening during the first week, then once daily, at the same time. The tests on the 14th day were performed 2 h after the last adminstration.

3 experiments were used to assess the sedative effects:

- **The first experiment** aimed to evaluate the sedative effect 30 minutes after the intraperitoneal administration of a single dose of aluminium chloride and aluminium sulphate in laboratory animals.
- **The second experiment** tried to assess the sedative effect 120 minutes after intraperitoneal administration of a single dose of aluminium chloride and aluminium sulphate, respectively, to laboratory animals.
- **The third experiment** aimed to evaluate the sedative effect after administering aluminium chloride and aluminium sulphate, respectively, through gavage, to the laboratory animals, for 2 weeks.

In the first two experiments, every mouse was introduced in the cage for locomotion in the same corner, labelled „start corner” and was left there for 5 minutes. When the animal moves, the oscillation produced interrupts the bunch of infrared waves and allows for the automatic

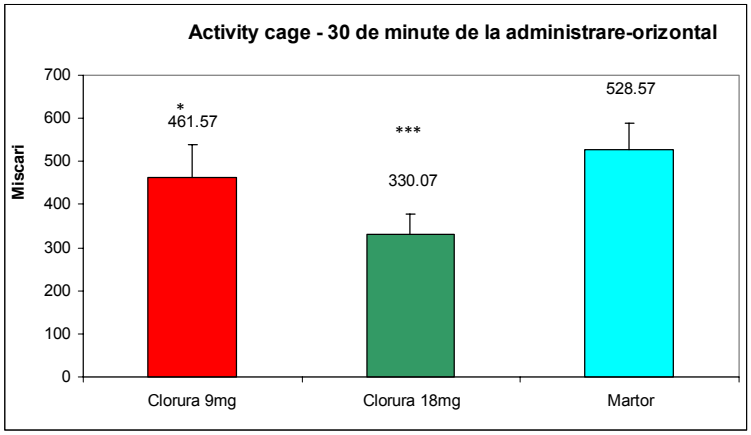
counting of horizontal and vertical movements. At the end of the five minutes, the mouse was removed from the cage, which was cleaned with alcoholic solution 10%.

In the third experiment, every mouse was placed in a corner of the simple exploration cage, the same corner for all mice, and the squares every mouse crossed with all four paws in 5 minutes, were counted. The cage was cleaned with alcoholic solution 10% after each test.

The data obtained in the first two experiments were expressed as the mean of the number of horizontal and vertical spontaneous movements performed by every mouse, and in the third experiment as the means of the number of squares the mouse crossed with all 4 paws. The results were analysed with *Microsoft Office-Excel*. The median and the standard deviation (STDEV) were calculated for every group, then the *t-Studenttest* was applied. The results were considered statistically significant if $p<0,05$.

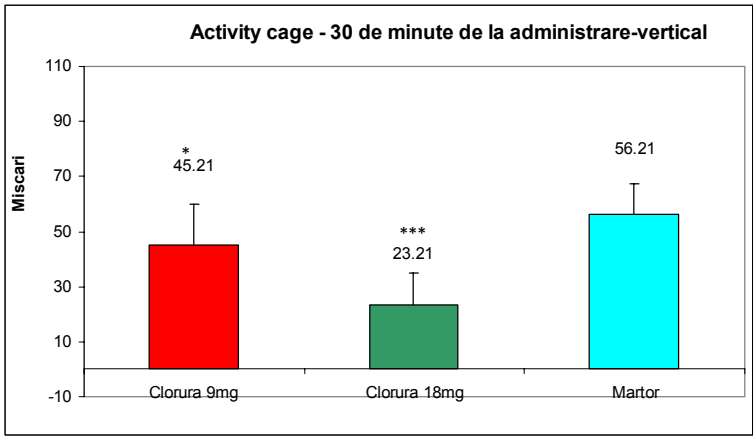
Results and discussions

30 minutes after the administration of the substances, the group that received aluminium chloride (graph no. 1) in a 9 mg/kg body weight dose showed a statistically significant decrease in the number of horizontal movements, with a mean number of 461.57 compared to the control group, which showed a mean of 528.57 ($p<0,05$). The 18 mg/kg body weight aluminium chloride also caused a statistically significant decrease of the mean number of horizontal movements, with a mean of 330.07 compared to the control group, for which a mean of 528.57 ($p<0,05$) was recorded.



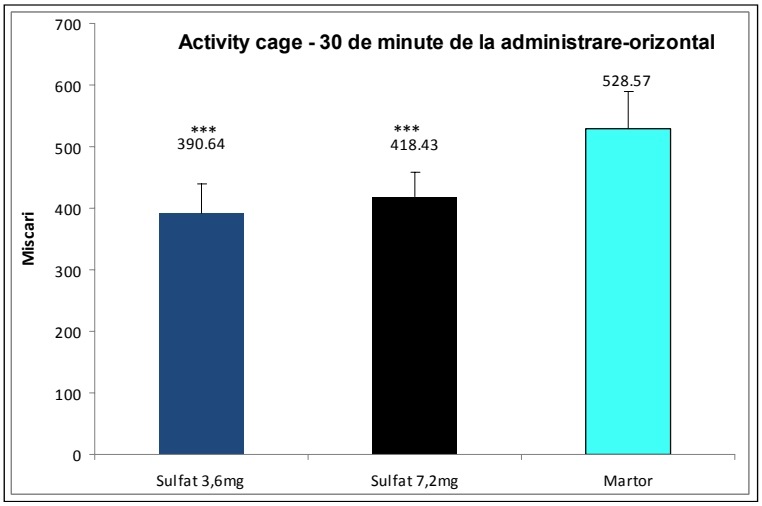
Graph no. 1. The influence of motor activity (horizontal movements) 30 minutes after the administration of aluminium chloride.

As far as the vertical movements are concerned (graph no. 2), 30 minutes after the administration, it can be noticed that the group that received chloride in a small dose had a number of 45.21vertical movements, which is statistically significant lower than the control group, which showed a mean of 56.21 ($p<0,05$). The group injected with aluminium chloride in a large dose showed a mean of 23.21 vertical movements, while the control group had a mean of 56.21 ($p<0,05$).



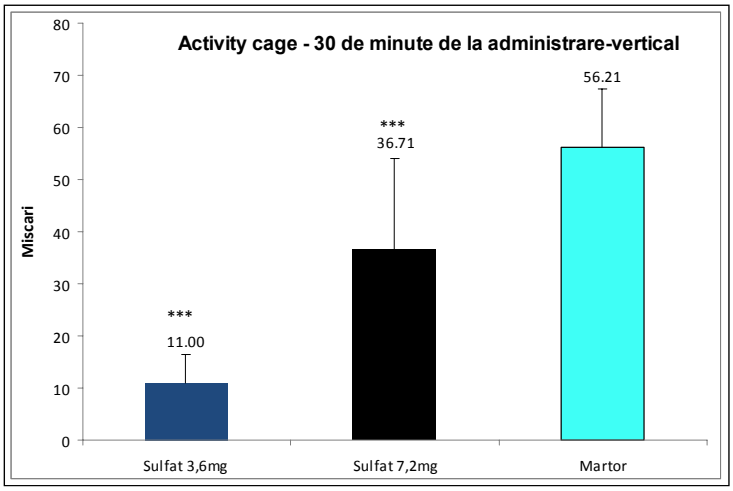
Graph no. 2. The influence of motor activity (vertical movements) 30 minutes after the administration of aluminium chloride.

The number of the horizontal movements in the group that received aluminium sulphate in a dose of 3.6 mg/kg body weight was 390.64, a much lower and less statistically significant value than the one recorded in the control group, which was 528.57, ($p<0,05$). The group that received 7.2 mg/kg body weight per dose aluminium sulphate showed a mean of horizontal movements of 418.43, statistically significant lower compared to the control group ($p<0,05$) (graph no. 3).



Graph no. 3. The influence of motor activity (horizontal movements) 30 minutes after the administration of aluminium sulphate.

The groups that received aluminium sulphate showed a statistically significant decrease in the number of vertical movements, with mean values of 11 and 36.71, respectively, compared to the control group, 56.21 ($p<0,05$) (graph no. 4).

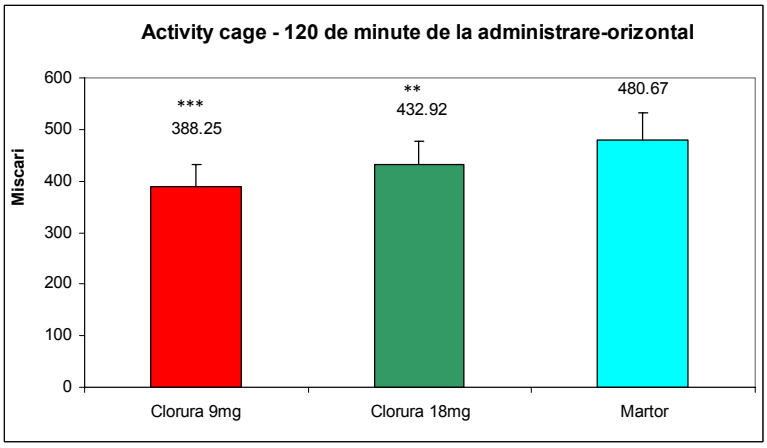


Graph no. 4. The influence of motor activity (vertical movements) 30 minutes after the administration of aluminium sulphate.

Discussions

The results we obtained allow us to state that both the aluminium chloride and the aluminium sulphate, administered in 2 doses each, triggered the decrease in horizontal and vertical movements performed by the tested animals, with a sedative effect of 30 minutes that was statistically significant compared to the control group. The sedative effect of the aluminium compounds is supported by the data in the literature, as well [3; 7; 8].

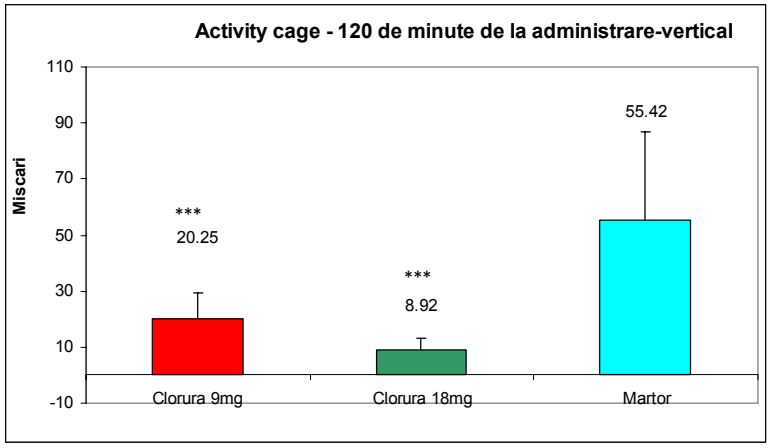
120 minutes after administration (graph no. 5), the number of horizontal movements for the group that received low dose aluminium chloride was 388.25, and 432.82 for the group receiving a large dose, with a statistically significant difference to the control group, in which the number of movements recorded was 480.67.



Graph no. 5. The influence of motor activity (horizontal movements) 120 minutes after the administration of aluminium chloride.

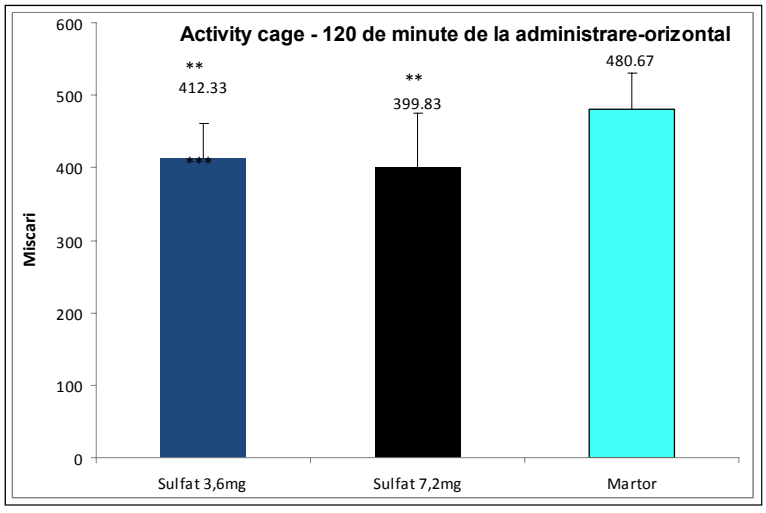
The vertical movements (graph no. 6), recorded 120 minutes after the administration of the substances show a statistically significant

decrease in the number of movements compared to the control group, the effect being dependent on the dose. Thus, the group that received chloride in a small dose performed a number of 20.25 vertical movements, and the group that received a large dose had a number of 8.92 movements, compared to 55.42 movements in the control group ($p<0,05$).



Graph no. 6. The influence of motor activity (vertical movements) 120 minutes after the administration of aluminium chloride.

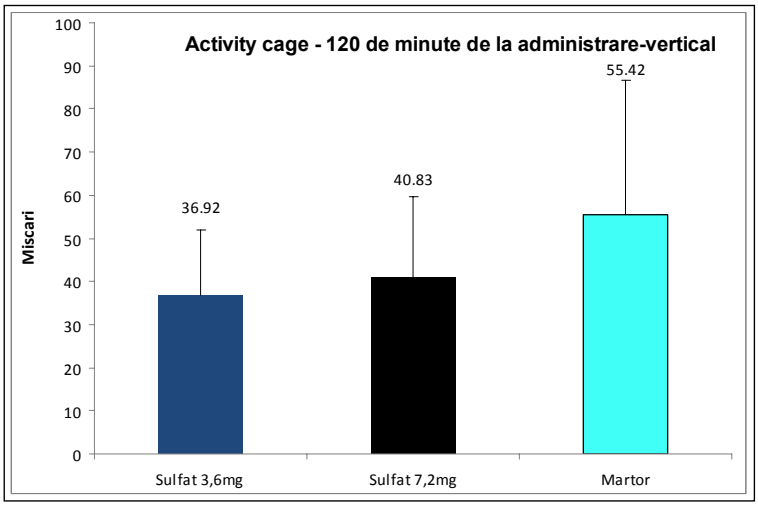
The group that received aluminium sulphate in a small dose exhibited a number of 412.33 horizontal movements (graph no. 7), and the group that received aluminium sulphate in a large dose showed a number of 399.83 movements. The differences are statistically significant compared to the control group, which had a number of 480.67 horizontal movements ($p<0,05$).



Graph no. 7. The influence of motor activity (horizontal movements) 120 minutes after the administration of aluminium sulphate.

The group that received a low dose of sulphate recorded a mean number of vertical movements of 36.92, and the group that received a high dose of sulphate had a mean number of 40.83 (graph no. 8)

compared to the control group, which had 55.42 movements; these differences are borderline statistically significant.

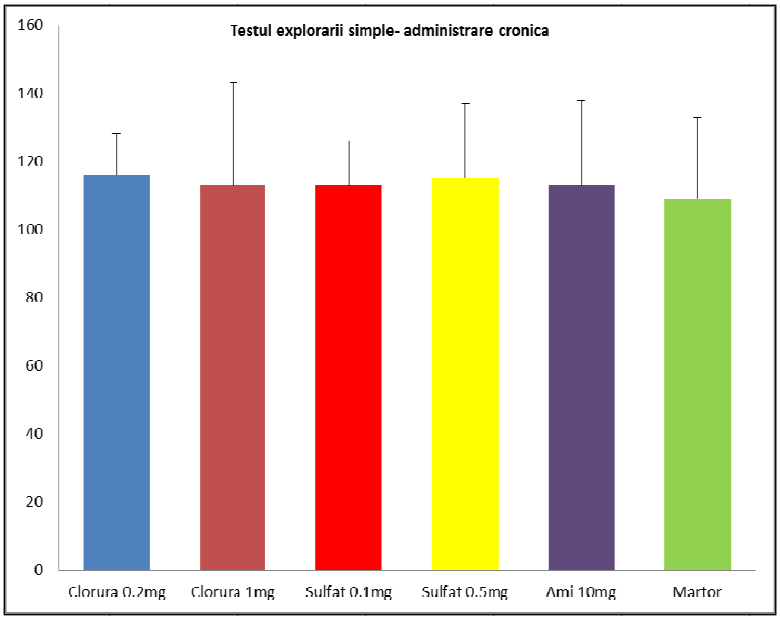


Graph no. 8. The influence of motor activity (vertical movements) 120 minutes after the administration of aluminium sulphate.

Discussions

Taking into account the results obtained in the study, it can be stated that the sedative effect lasted 120 minutes after administration only in the mice that received aluminium chloride. The groups that received aluminium sulphate showed borderline statistically significant differences compared to the control group. It is more likely that the duration of the sedative effect is influenced by the administered compound, if we take into consideration the fact that in the first experiment both substances had a significant, dose-related influence on the tested mice locomotion. It can also be stated that aluminium has a rate of elimination from the body which differs according to the aluminium compound. The data in the literature show that aluminium influences motor activity in the laboratory animals, but do not specify whether there are any differences between the tested compounds [4; 7].

Following the chronic administration of aluminium compounds, it was noticed that the group that received 0.2 mg/dose chloride exhibited had a mean number of 115.58 of crossed squares, whereas the group that received 1 mg/dose chloride had a number of 113.15 movements; the group that received 0.1 mg/ dose sulphate had a value of 112.84, and the group that received 0,5 mg/ dose amounted to 114.66, compared to the control group, which had a mean of 108.71. All the results in this test were similar to those of the control group, without any statistically significant differences between groups (graph no. 9).



Graph no. 9. The evaluation of the sedative effect of aluminium chloride and sulphate in chronic administration.

Discussions

Chronic oral administration, in different doses, of aluminium chloride and sulphate do not influence locomotion in mice.

Conclusions

The aluminium compounds administered intraperitoneally to mice, in large doses, caused a decrease in the number of horizontal and vertical movements, compared to the control group, which can be considered as a sedative effect occurring 30 minutes after administration and lasting for two hours. Chronic oral administration of aluminium did not alter animal alertness. In case of chronic administration, it is possible that animals may develop tolerance to the sedative effect noticed in acute administration; tolerance is a typical phenomenon for the sedative effect. Nevertheless, if tolerance to the sedative effect of aluminium develops, it can only be pharmacodynamic tolerance.

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THE PROFILE OF CARDIOVASCULAR DISEASES IN FORESTRY WORKERS

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Rezumat: *Domeniul forestier, reprezintă un domeniu cu muncă grea, activitatea desfăşurându-se de cele mai multe ori în condiţii nefavorabile de macroclimat, aceste componente putând influenţa starea de sănătate a lucrătorilor. Cele mai frecvente boli care apar la lucrătorii din aceste sectoare sunt bolile cardiovasculare (BCV) şi afecţiunile aparatului musculoscheletal. Studiul prezentat a pornit tocmai de la aceste premize şi a urmărit incidenţa şi prevalenţa afecţiunilor cardiovasculare, în relaţie cu factorii de risc profesionali de la locurile de muncă din cadrul a trei ocoale silvice şi cu factorii de risc cardiovasculari asociaţi.*

Abstract: *The forestry industry is a field involving heavy physical workload, often being performed in unfavourable weather conditions, that may influence the workers' health state. The most common diseases among forestry workers are cardiovascular diseases (CVD) and musculoskeletal system diseases. The study started from these premises and focused on the incidence and prevalence of cardiovascular diseases associated with occupational risk factors at the workplace in three forest districts and cardiovascular risk factors.*

Keywords: foresty workers,cardiovascular diseases, arterial hypertension, ischaemic cardiomyopathy

Introduction

Any occupational activity involves the presence of risk factors that may cause, maintain or worsen several diseases. The forestry industry is a field involving heavy physical workload in unfavourable weather conditions, that may influence the workers' health state. The most common diseases among forestry workers are cardiovascular diseases (CVD) and musculoskeletal system diseases. According to occupational diseases reporting system in Romania, high blood pressure (HBP) and ischaemic cardiomyopathy are labelled as work-related diseases. Occupational factors that may cause or contribuite to HBP are noise, vibrations, high air temperature and high energy radiation, as well as neuropsychological load; physical and neuropsychological strains are associated with ischaemic cardiomyopathy.

Upon above-mentioned three premises, a retrospective study was conducted to assess workers in 3 forest districts in Bacău county, namely Târgu Ocna, Zeletin, Oneşti, during their periodic medical examination from May to June 2015.

The study focused on (1) the incidence and prevalence of cardiovascular diseases: high blood pressure, ischaemic cardiomyopathy, valvulopathy and other CVDs; (2) associated cardiovascular risk factors: age >55 years, diabetus mellitus, smoking habit, obesity; (3) the