# 68 - PIRETROID PESTICIDES USE: KNOWLEDGE, ATTITUDE AND PRACTICE.

NATHALIA ZANOLLI CALDEIRA;
RICCELI PINTO COSTA;
TASSIA MAGALHÃES TEODOSIO SILVA;
SORAYA GARCIA AUDI
FACULDADES METROPOLITANAS UNIDAS – FMU, SÃO PAULO, SP, BRASIL.
nathi_zc@hotmail.com

## INTRODUCTION

Term resulting from plague, pesticides are those that employ any animal, plant or microorganism living where they are not wanted, with intent to destroy, annul, repeal or decrease the efficiency of these pests to compete with other micro -organisms. ( WARE, 1983)

Indispensable used in agriculture, because insects cause major losses of food, there is the challenge of ensuring production and quality of food avoiding losses, fact that ranks Brazil as the third largest consumer of insecticide in the world and the first in Latin America. (SANTOS ; AREAS ; REYES , 2007) .

Existing groups of insecticides, according to the chemical structure are plant insecticides, inorganic synthetic organic pesticides which belong to the chemical groups of organophosphates, organochlorines, carbamates and pyrethroids (Savoy, 2011), but due to high environmental toxicity and endurance, some pesticides have banned use in Brazil, making pyrethroid an alternative of use (SANTOS ; AREAS ; REYES , 2007) .

Its use came from farm fields to residences, making the use of household insecticides common, especially aerosols as the most used insecticides, for its easy application and convenience. (DIEL ; FACCHINI ; DALL'AGNOL , 2003)

The pyrethrum flowers began to be recognized in the mid-nineteenth century and its manufacturing began in Japan and East Africa, because aside from its role as insecticide, it does not remain for a long time in the environment and it knock-downs insects, they lose coordination and flight capacity. (Sassine, 2002).

The evolution of pyrethroids has started in 1949 and split into generations, which arise as a first Allethrin, Tetramethrin the (1965), Resmethrin (1967), Bioresmethrin (1967) and Bioallethrin (1969) and the second generation Fenvalerate (1972) and Permethrin (1973) in the third generation, and Cypermethrin, Fenpropatrim, Flucitirnato, and others in the fourth generation. (Sassine 2002)

To set its toxic action is necessary to classify them into two distinct classes which are based on physiological response and action in the nervous system: class I representing Allethrin, Permethrin and Resmethrin demonstrating rapid poisoning even at low doses and causing neurological effects of peripheral origin, causing aggression, twitching, tremors, convulsions, lack of coordination, all those known as T Syndrome (tremor) in mice. Class II is represented by Phenopropanate, Cypermethrin and Deltamethrin slowly shows the signs of intoxication, causing central neurological effects such as excessive salivation, abnormal movements of the limbs, convulsions, paralysis, all those known as Syndrome CS (Choreoathetosis and salivation). (Sassine 2002)

Studies have shown that Permethrin causes blockage of aerobic and anaerobic metabolism of fish (Sassine, 2002), therefore, it may act in species that suffer accidental exposure by ingestion of contaminated food or during application of the product. (SANTOS; AREAS; REYES, 2007)

To search for toxicological effects on the central nervous system, studies of the effect of Cypermethrin on rats with repeated exposure presented behavioral abnormalities, which were related to humans for exposure to this class of insecticide. (Sassine 2002)

The main route of exposure to pyrethroids is through its commercial use in households, during its application, as well as through ingestion of food containing residues, whose symptoms of poisoning are ingestion, stomach pain, vomiting, nausea and, in severe cases, fasciculations of muscles' extremities, seizures, drowsiness, coma and death if any, would be due to respiratory failure. (Sassine 2002)

In contact with dust and aerosols, or dermal contact there is burning and tingling in the face, dizziness 4-6 hours after exposure, in children, the use of shampoos containing pyrethroids, such as those used against lice can cause eye accidents. (Sassine 2002)

## OBJECTIVES

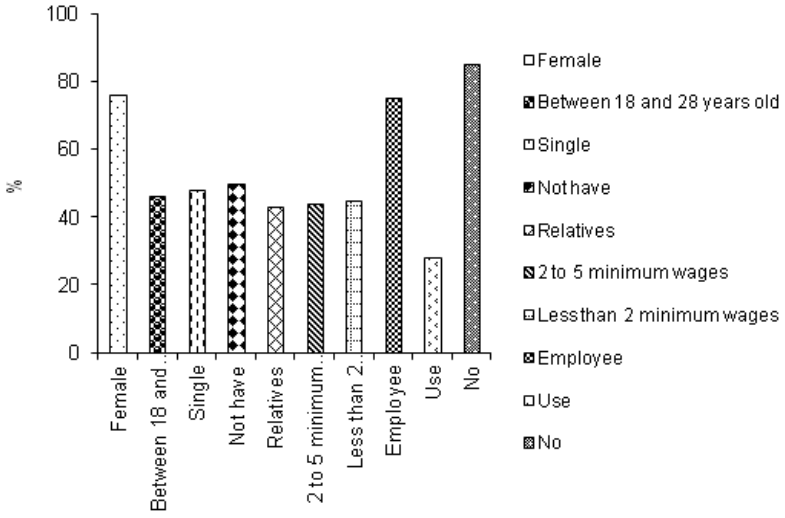
To assess the information of subject of the research (consumer) on domestic pyrethroids insecticides, its risks and the precautions taken during application, as well as to study the influence of socioeconomic and cultural factors of the subjects of the research in the information.

## MATERIAL AND METHODS

This is a study of epidemiological, descriptive, cross-sectional, quantitative approach nature. The study consisted of one hundred (n = 100) individuals older than 18 years old, who agreed to participate in the study. For the observance of ethical aspects, a Term of Consent was drafted, based on Resolution No. 196/96, from the National Health Council, Ministry of Health, establishing the Ethics in Public Health, which was completed and signed by the subjects. For the composition of the study, a form containing objective questions was composed, which was used as variables. After filling the form, the data were compiled, mechanically, with graphical and tabular display, expressed in numbers and percentages, based on the interpretation of the variables as well as the knowledge on the subject. Statistical analysis was done in the face of central tendency (parametric data) and Fischer test (nonparametric data). The discussion was guided by the bibliography.

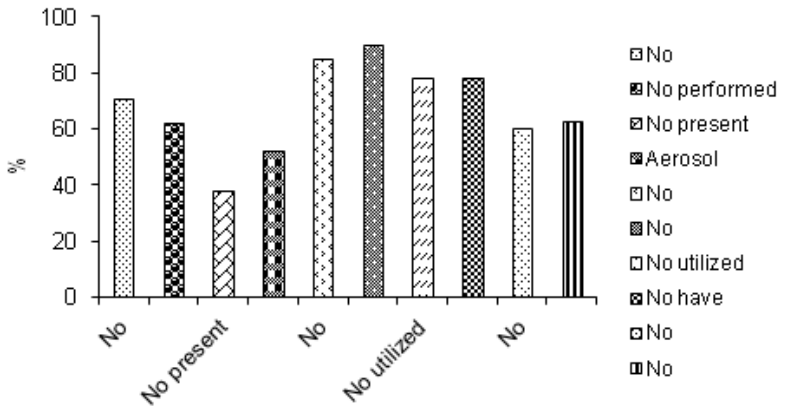
## RESULTS

Graph 1 – Distribution in percentages with respect to gender, age, marital status, membership, housing, household income, occupation/employment, revenue, use of medicines and habit of smoking, of respondents of the greater São Paulo and the city of São Paulo, 2013.



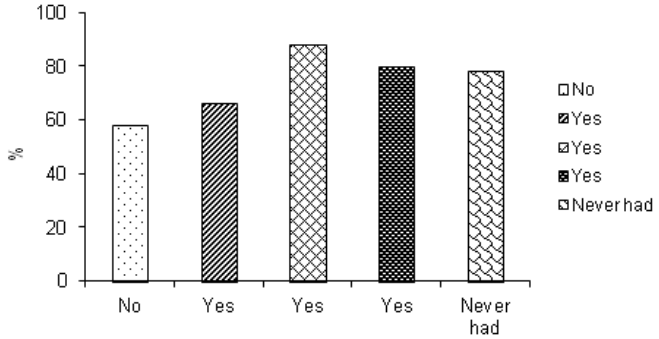

The majority of respondents were female, between the ages of 18 to 28 years old, and about 85% do not have the habit of smoking.

Graph 2 – Distribution as a percentage in relation to the consumption of alcoholic beverages, are physical activity, present health problems, using insecticides in residence, to the knowledge of the derived names of insecticides, the knowledge that domestic insecticides are pyrethroids class, the use of another form of protection as well as insecticides, if you possess knowledge about the effects caused by insecticides the knowledge about the contagion in foods, and whether to acquire the product checks the registry of ANVISA of respondents of the greater São Paulo and the city of São Paulo, 2013.




It is observed that 52% of respondents use aerosol-type insecticides at his residence, 85% have no knowledge of the derived names of insecticides, 90% do not have the knowledge that the domestic insecticides are pyrethroids, class 78% do not use another form of protection beyond the insecticides and 78% are unaware of the effects caused by them.

Graph 3 – Distribution in percentages in relation to the habit of reading the information from the package, the preservation of appropriate storage instructions recommended of insecticides at the residence in case of intoxication know where to look for help and performed some kind of irritation caused by insecticide by the interviewees of the greater São Paulo and the city of São Paulo, 2013.




The subject of research, 88% store the insecticides at his residence in proper place, 80% in the case of intoxication know where to look for help, and 78% never submitted irritations caused by insecticide.

**CONCLUSION**

The results suggest that the subjects using pyrethroid insecticides, even without full knowledge, is the most used method in eliminating insects. However, they know about adverse effects, recognizing headaches and skin irritation as the most common, but few associate certain signs and symptoms such as poisoning from the use of this insecticide and do not read packaging during and after the purchase.

**REFERENCE**

SANTOS, Susana Pina dos. A química dos inseticidas (parte I). Disponível em: < http://www.spq.pt/boletim/docs /BoletimSPQ_085_043_09.pdf> Acesso: 01 de outubro de 2013.

SASSINE, André. Determinação de pesticidas piretróides em leite bovino por meio da cromatografia a gás acoplada à espectrometria de massas de armadilha iônica - gc/itm s ("ion trap"). Disponível em: < http://pelicano.ipen.br/PosG30/Texto Completo/Andre%20Sassine_M.pdf> Acesso em: 01 de outubro de 2013.

SANTOS, Mônica Alessandra dos; REYES, Felix Guilhermo Reyes; AREAS, Miguel Arcanjo. Piretróides – Uma visão geral. Disponível em: <http://serv-bib.fcfar.unesp.br/seer/index.php/alimentos/article/view/173/181> Acesso: 01 de outubro de 2013.

SANTOS, Susana Pina dos. A química dos inseticidas (parte II) . Disponível em: <http://www.spq.pt/ boletim/docs/BoletimSPQ_086_037_09.pdf> Acesso: 05 de outubro de 2013.

RODRIGUES, Agna Rita dos Santos. Caracterização da resistência de joaninhas predadoras ao lambda-cialotrina. Disponível em: <http://www.ppgea.ufrpe.br/novosite/images/Teses/agnarodrigues.pdf> Acesso: 05 de outubro de 2013.

SAVOY, Vera Lucia Tedeschi. Classificação dos agrotóxicos. Disponível em: <http://www.biologico.sp.gov.br/docs/bio/v73_1/savoy_palestra.pdf> Acesso: 05 de outubro de 2013.

DIEL, Cristiane; FACCHINI, Luiz Augusto; DALL'AGNOL, Marinel Mór. Inseticidas domésticos: padrão de uso segundo a renda per capita. Disponível em: <http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0034-89102003000100013> Acesso: 05 de outubro de 2013.

MONTANHA, Francisco Pizzolato; PIMPÃO, Cláudia Turra. Efeitos toxicológicos de piretróides (Cipermetrina e Deltametrina) em peixes. Disponível em: <http://faef.revista.inf.br/imagens_arquivos/arquivos_destaque/esxzix4eu8euO8 S_2013-6-28-18-9-28.pdf> Acesso: 09 de outubro de 2013.

DEVS. INFORME DO DEPARTAMENTO DE VIGILÂNCIA SANITÁRIA. Inseticidas domésticos – cuidados em seu uso. Disponível em: <http://www.sesa.pr.gov.br/arquivos/File/ACS/InformeDEVSUsodeInseticidasDomesticos.pdf> Acesso: 09 de outubro de 2013.

**PIRETROID PESTICIDES USE: KNOWLEDGE, ATTITUDE AND PRACTICE.**

**ABSTRACT**

Pyrethroids are synthetic insecticides of plant origin (Chrysanthemum Chrysanthemum and cinerariaefolium cocineum) that despite the low toxicity to humans is mainly through skin absorption and inhalation route becomes worrisome if the environment is closed. In the tables of intoxication observed nausea, vomiting, sore throat, abdominal pain, dizziness, fatigue, headaches, hyperexcitability, lack of coordination, and in severe cases coma and convulsions. Objectives: To assess consumer awareness about domestic pyrethroid pesticides, as well as precautions for use. Material and Methods: This was a descriptive, cross-sectional, quantitative, of which 100 people agreed be surveyed, answering a form containing objective questions that were used as variables. The data, once compiled, are presented in tables and simple frequency graphs expressed in numbers and percentages. The ethical aspects were respected, in accordance with Resolution No. 196/96 (CNS - MS). Results: It was observed that 62 % of the subjects use household insecticides, 90% not aware that household pesticides are from pyrethroid class, 78% only use insecticides to protect against insects and do not even know the deleterious effects on health; and only 22 % have associated symptoms and signs with poisoning by household insecticides. Conclusion: The results suggest that the subjects using pyrethroid insecticides, even without knowing what they are using, because this is the most used method in eliminating insects. However, the adverse effects are known, headaches and skin irritation are recognized as the most common, but few associate certain signs and symptoms such as poisoning from the use of this insecticide and do not read packaging during and after the purchase.

**KEYWORDS:** Pyrethroids, insecticides, pesticides.

**UTILISATION D'INSECTICIDES PYRETHRINOÏDES: CONNAISSANCES, ATTITUDES ET PRATIQUE**

**RÉSUMÉ**

Les pyréthroïdes synthétiques sont les insecticides, d'origine végétale (Chrysanthemum cinerariaefolium et chrysanthème cocineum) qu'en dépit de la faible toxicité pour les humains, a comme principale voie d'absorption par voie cutanée et l'inhalation devient une préoccupation si l'environnement est fermé. Dans les tableaux d'intoxication observée si mal de coeur, vomissements, maux de tête, mal de gorge, des douleurs abdominales, des étourdissements, de la fatigue, des maux de tête, hyperexcitabilité, moteur non coordonnés et, dans les cas les plus graves le coma et convulsions. Objectifs: évaluer les connaissances du consommateur sur les insecticides pyréthroïdes domestiques, ainsi que les précautions d'usage. Matériel et méthodes: Il s'agit d'un descriptif, transversales, quantitatifs, dont 100 personnes ont accepté de participer à la recherche, en réponse à un formulaire, contenant questions objectives qui ont été utilisés comme variables. Les données, une fois compilé, Ont été présentés dans des tableaux et des graphiques de simple fréquence exprimée en chiffres et en pourcentages. Les aspects éthiques sont respectés, conformément à la Résolution nº 196/96 (CNS-MS). Résultats: il a été observé que 62% des sujets de la recherche utilisant insecticides ménagers; 90% ne sont pas conscients que les insecticides ménagers sont de classe les pyréthroïdes; 78% seulement utilisent des insecticides tels que la protection contre les insectes et ne connaissent pas les effets délétères sur la santé; et, seulement 22% sont associés à des symptômes et des signes d'intoxication par insecticides ménagers. Conclusion: Les résultats suggèrent que les sujets de recherche utilisent des insecticides pyréthroïdes, même sans savoir ce qu'ils utilisent, ce qui est la méthode la plus couramment utilisée dans l'élimination des insectes. Cependant, connaître les effets néfastes, en reconnaissant maux de tête et irritation de la peau, comme les plus communs, mais peu sont associés à certains signes et symptômes que l'empoisonnement découlant de l'utilisation de cet insecticide et ne lisez pas l'emballage pendant et après l'achat du produit.

**MOTS-CLÉS**: Pyréthroïdes, Insecticides, Pesticides, Toxicologie.

**USO DE INSECTICIDAS PIRETROIDES: CONOCIMIENTOS, ACTITUDES Y PRÁCTICAS**

**RESUMEN**

Los piretroides sintéticos son de origen vegetal (Chrysanthemum cinerariaefolium y Chrysanthemum cocineum) que a pesar de la baja toxicidad para los seres humanos, tiene como principal vía de absorción por la piel y la inhalación se convierte en un problema si se encuentra en un entorno cerrado. En los cuadros de intoxicación observan si las náuseas, vómitos, dolor de cabeza, dolor de garganta, dolor abdominal, mareos, fatiga, dolores de cabeza, hiperexcitabilidad, coordinación motora, y en casos severos coma y convulsiones. Objetivos: Evaluar el conocimiento de los consumidores sobre los insecticidas piretroides nacionales, así como las precauciones de uso. Material y Métodos: Se trata de un estudio descriptivo, transversal, cuantitativo, de los cuales 100 personas accedieron a participar en la investigación, responder a un formulario, que contiene cuestiones objetivas que se utilizaron como variables. Los datos, una vez compilado, se presentaron en tablas y gráficos de frecuencia simple expresada en números y porcentajes. Los aspectos éticos son respetados, de conformidad con la Resolución nº 196/96 (CNS-MS). Resultados: se observó que el 62% de los sujetos de la investigación con los insecticidas domésticos; 90% no son conscientes de que los insecticidas domésticos son de clase los piretroides; 78% sólo usar insecticidas como, por ejemplo, protección contra insectos y no sabe los efectos perjudiciales sobre la salud; y, sólo el 22% tienen síntomas y signos asociados con las intoxicaciones por insecticidas domésticos. Conclusión: Los resultados sugieren que los sujetos de la investigación usar insecticidas piretroides,a sin saber qué es lo que están utilizando, siendo este el método más utilizado en la eliminación de los insectos. Sin embargo, los conocimientos sobre los efectos adversos, reconociendo los dolores e irritación en la piel como los más comunes, pero pocos están asociados con ciertos signos y síntomas como la intoxicación por el uso de este insecticida y no lea el envase durante y después de la compra del producto.

**PALABRAS CLAVE:** Piretroides, Insecticidas, Pesticidas, Toxicología.

**USO DE INSETICIDAS PIRETRÓIDES: CONHECIMENTO, ATITUDE E PRÁTICA**

**RESUMO**

Os piretróides sãoinsecticidassintéticos,de origem vegetal (Chrysanthemum cinerariaefolium e Chrysanthemum cocineum) que apesar da baixa toxicidade para humanos, tem como principal via de absorção a pele e, a via inalatória torna-se preocupante se o ambiente estiver fechado. Nos quadros de intoxicação observam-se náuseas, vômitos, dor de garganta, dores abdominais, tonturas, fadiga, dores de cabeça, hiperexcitabilidade, descordenação motora, e em casos graves coma e convulsão. Objetivos: Verificar o conhecimento do consumidor sobre os inseticidas piretróides domésticos, bem como as precauções na utilização. Material e Métodos: Trata-se de um estudo descritivo, transversal, quantitativo, do qual 100 pessoas concordaram em participar da pesquisa, respondendo a um formulário, contendo questões objetivas que foram utilizadas como variáveis. Os dados, depois de compilados, foram apresentados em tabelas e gráficos de freqüência simples expressos em números e percentagens. Os aspectos éticos foram respeitados, de acordo com a Resolução Nº 196/96 (CNS-MS). Resultados: Observou-se que 62% dos sujeitos da pesquisa utilizam inseticidas domésticos; 90% não têm conhecimento que os inseticidas domésticos são da classe piretróides; 78% só utilizam inseticida como proteção contra os insetos e nem conhecem os efeitos deletérios sobre a saúde; e, somente 22% associaram sintomas e sinais com intoxicação por inseticidas domésticos. Conclusão:Os resultados obtidos sugerem que os sujeitos da pesquisa utilizam inseticidas piretróides, mesmo sem saber o que estão usando, sendo este, o método mais utilizado na eliminação de insetos. Entretanto, sabem sobre os efeitos adversos, reconhecendo dores de cabeça e irritações na pele como os mais comuns, mas poucos associam determinados sinais e sintomas como intoxicações decorrentes do uso desse inseticida e não lêem a embalagem durante e após a compra do produto.

**PALAVRAS CHAVES:** Piretróides, Inseticidas, Pesticidas.