

**KNOWLEDGE, ATTITUDE AND PRACTICES OF PET OWNERS ON INDOOR  
PLANT POISONING IN PET CATS IN KELANTAN**

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## CERTIFICATION

This is to certify that we have read this research paper entitled 'Knowledge, Attitude and Practices Study on Indoor Plant Poisoning in Pet Cats Among Pet Owners in Kelantan' by Muhammad Izad Bin Mohd Noor, and in our opinion it is satisfactory in terms of scope, quality and presentation as partial fulfilment of the requirement for the course DVT 44603 - Research Project.



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## DEDICATIONS

I dedicate my dissertation work to my family and many friends. A special feeling of gratitude to my loving parent, Asmah, whose words of encouragement and push for tenacity ring in my ears. My brother and sister, Farhan, Fahana, Azri and Azian who have never left my side and are very special.

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## ABSTRACT

An abstract of the research paper presented to the Faculty of Veterinary Medicine, Universiti Malaysia Kelantan, in partial requirement on the course DVT 44603 – Research Project

There is no data or information provided on pet owner's awareness of indoor plant poisoning in pet cats in Kelantan. This study was conducted to determine the level of knowledge, attitude, and practices on indoor plant poisoning in pet cats among pet cat owners in Kelantan. This study was carried out by distributing pretested KAP to 100 respondents which have been chosen randomly in Kelantan. Based on the data collected, about 68% of the sample population was aware of plant poisoning in animals while 32% was not. Among all the respondents, 57% knows of indoor plant poisoning in pet cats, 58% knows that snake plant is poisonous to cats, 70% knows that indoor plant poisoning can lead to sudden death, 44% knows that aloe vera leaf is safe to be consumed by the cats. For the attitude and practices, the good level of awareness can be identified with 96% agreeing that they will bring the pet cats to the veterinarian as soon as possible after ingestion of the poisonous indoor plant. 54% of the respondents will do research regarding the indoor plant that they have in their house and 84% will always check the location and operation hours of the nearby veterinarian. As a conclusion, the level of knowledge, attitude and practices among the pet owners are good.

**Keywords :** *KAP, indoor; plant; poisoning, pet cats, owners, Kelantan*

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## ABSTRAK

Abstrak daripada kertas penyelidikan dikemukakan kepada Fakulti Perubatan Veterinar, Universiti Malaysia Kelantan untuk memenuhi sebahagian daripada keperluan kursus DVT 44603 – Projek Penyelidikan.

Tiada data atau maklumat yang dapat ditemui tentang kesedaran pemilik haiwan peliharaan terhadap keracunan tumbuhan dalaman di dalam kucing peliharaan di Kelantan. Kajian ini dijalankan untuk menentukan tahap kesedaran pemilik haiwan peliharaan tentang keracunan tumbuhan dalaman pada kucing peliharaan di Kelantan. Kajian ini dijalankan dengan mengedarkan boring KAP yang telah diuji terlebih dahulu, kepada 100 responden yang telah dipilih secara rawak di Kelantan. Berdasarkan data yang dikumpul, kira-kira 68% daripada populasi sampel mempunyai kesedaran tentang keracunan tumbuhan pada haiwan manakala 32% tidak. Daripada kesemua responden, 57% mempunyai pengetahuan berkenaan keracunan tumbuhan dalaman pada kucing peliharaan, 58% mempunyai pengetahuan bahawa pokok lidah jin beracun kepada kucing, 70% mengetahui bahawa keracunan tumbuhan dalaman dapat menyebabkan kematian mengejut, 44% mengetahui bahawa daun aloe vera adalah selamat untuk dimakan oleh kucing. Bagi sikap dan amalan, kadar kesedaran yang bagus dapat diketahui apabila 96% bersetuju bahawa mereka akan membawa kucing peliharaan ke klinik veterinar secepat mungkin setelah pengambilan tumbuhan dalaman beracun. 54% daripada responden akan membuat kajian berkenaan tumbuhan dalaman di dalam rumah mereka dan 84% akan selalu memeriksa lokasi dan waktu operasi klinik veterinar yang terdekat. Sebagai kesimpulan, tahap pengetahuan, sikap dan amalan dalam kalangan pemilik haiwan peliharaan adalah pada tahap yang bagus.

***Kata kunci*** : KAP, dalaman; tumbuhan; keracunan, kucing peliharaan, pemilik, Kelantan

## 1.0 INTRODUCTION

The COVID-19 pandemic has changed our lives in many ways that we might or might not see. Indoor plants have emerged as one of the new trends thanks to it. According to a recent study conducted from 2019 to 2021, more than 70% of plant buyers reported that houseplants make them happier while more than 40% reported feeling great optimism about the future even though COVID-19 heavily affected their personal and professional lives (Knuth et al., 2021). The same trend can be observed in Malaysia as many online sellers for indoor plants have popped out in the last two years such as Bloomspace.co, Flower Chimp Malaysia and Pudu Ria Florist Sdn. Bhd.

However, would this also benefit the indoor pets such as pet cats? Recent epidemiological studies in the United States reported that 5.4% of poisoning cases in domestic animals in the year 2017 is due to plant poisoning (Means & Wismer, 2018). “Poisonous plant is defined as a plant that when ingested or touched in sufficient quantity can be harmful or fatal to an organism or any plant capable evoking a toxic and fatal reaction” (Gupta, 2018). Plant poisoning can be referred as the adverse effects consequences from ingesting or coming into contact with a poisonous plant or substance from the plant (McBratney, 2020).

### **1.1. Research Problem**

Despite very low occurrences of plant poisoning involving cats that been reported by a study conducted in the United States (Means & Wismer, 2018) and Australia (McKenzie, 2020), cats are at a high risk of ingesting several plants in the environment due to their curiosity and indiscriminate eating habits (Means & Wismer, 2018). There are many poisonous indoor plants that can be found in Malaysians' households such as peace lilies, snake plant and aloe vera (Halim, 2021), yet there is still no study that had been carried out to evaluate the Knowledge, Attitude and Practices study on indoor plant poisoning in pet cats among pet owners in Kelantan.

### **1.2. Research Questions**

What is the level of knowledge of pet owners living in Kelantan towards indoor plant poisoning in pet cats?

What are the common level of attitudes of pet owners living in Kelantan towards indoor plant poisoning in pet cats?

What are the common level of practices among the pet owners living in Kelantan towards plant poisoning in cats?

### **1.3. Research Hypothesis**

Pet owners living in Kelantan have a good level of knowledge towards indoor plant poisoning in pet cats.

Pet owners living in Kelantan have a good level of attitude towards indoor plant poisoning in pet cats.

Pet owners living in Kelantan have a good level of practices towards indoor plant poisoning in pet cats.

#### **1.4. Objectives**

To determine the level of knowledge among pet owners living in Kelantan towards indoor plant poisoning in pet cats.

To determine the level of attitude among pet owners living in Kelantan towards indoor plant poisoning in pet cats.

To determine the common practices among pet owners living in Kelantan towards indoor plant poisoning in pet cats.

## 2.0 LITERATURE REVIEW

### 2.1. Definition of Plant Poisoning

Plant poisoning can be referred to as the adverse effects consequences from ingesting or coming into contact with a poisonous plant or a substance from the plant (McBratney, 2020)

### 2.2. Plant Poisoning in Cats

In Europe, indoor plant poisoning in companion animals are far from uncommon according to European literature in which they reported 11% of the enquiries on pet poisoning received by the poison centres are plant-related (Keck et al., 2004). In a retrospective study conducted by Belgian Poison Centre (BPC), plant poisoning was responsible for 6.9% of poisoning incidents in companion animals, including horses (Vanderbroucke et al., 2010). From 1994 to 2008, Veterinary Poison Information Service (VPIS) recorded 69 cases of canine poisoning and four cases of cat poisoning following *Allium* spp. poisoning (Sturgeon and Campbell, 2008). Another study was conducted in which data was collected from the period of 1991 to 2008 revealed that 25% of poisoning in cattle is due to plant poisoning (Caloni et al., 2012). 12% of domestic animals poisoning was associated with plant poisoning, according to the data from the Veterinary Poisons Information Service (VPIS) in London (Campbell, 1998). Currently, there has been no study conducted locally.

### 2.3. Signs of Plant Poisoning in Cats

Signs of plant poisoning varies with the type of plant ingested. In a study conducted, it is found that *Allium* species such as onion and garlic are responsible for the poisoning due to Organosulphur compound. The compound is associated with haemolytic anaemia accompanied by the formation of Heinz bodies which can cause severe haemoglobinuria in cats which can lead to jaundice and if not treated, sudden death (Sturgeon and Campbell, 2008). *Spathiphyllum* spp. is an oxalate-containing plants. The soluble oxalates can bind to serum calcium forming calcium

oxalate that will cause systemic hypocalcaemia leading to signs such as muscle fasciculations, tetany and convulsions in cats. The calcium oxalate, with time, may crystallise in renal tubules causing nephrosis, tubular obstruction and renal failure (Osweiler, 1996). Another study reported that ingestion of *Aloe barbadensis* in humans will result in diarrhoea, hypokalaemia, pseudomelanosis coli, kidney failure and also phototoxicity and hypersensitivity reactions (Guo & Mei, 2016). In research to study the lethal dose of snake plant in Wistar rats, messy appearance observed which include hunched posture, red eyes discharge due to porphyrin secretion, partially closed eyelids, dilated pupils, nasal discharge, and abnormal resting position (Fitria et al., 2022).

#### **2.4. Management of Plant Poisoning in Cats**

Toxicity of the plants is influenced by the species involved and environmental related factors such as the parts ingested, the vegetative stage and the environmental condition in which the plant is kept (Bartero et al., 2020). In general, there is no predetermined therapies for plant poisoning, but knowing the species involved is very helpful to emit a prognosis and to define how prompt has to be the medical intervention with decontamination and symptomatic/supportive care (Bartero et al., 2020). It is reported that there is no specific antidote for *Allium* poisoning, however, giving supportive care would be helpful (Salgado et al., 2011). This includes, warding, in order to administer intravenous fluid and possibly blood transfusion (Salgado et al., 2011). Therapeutic approaches include giving gastrointestinal decontamination, antioxidant vitamins or N-acetyl-cysteine (Salgado et al., 2011). Emetics such as apomorphine 0.08 mg/kg can be given intravenously followed by activated charcoal (Salgado et al., 2011). As for the owners, ingestion of *Allium* needs to be stopped as soon as possible followed by physically cleaning the mouth (Salgado et al., 2011). Placing the plants out of the pets' reach would be the best preventative measure. A study was proposing that, plant poisoning, in general, has no specific treatments (Bertero et al., 2020). However, knowing the species can be helpful in indicating the target organ of the toxin, to provide a rapid and focused intervention (Bertero et al., 2020). Therefore, since peace lilies only affect the oral



mucosa of the cats, owners can physically remove the plants from the oral cavity and flush them with clean water. Severe oedema of throat and larynx would require surgical intervention in which tracheostomy would need to be carried out (McKenzie, 2020). Although there have been no reports for the approaches to *Aloe barbadensis* and *Sansevieria trifasciata* poisoning, we can assume the similar approaches should be taken. However, cats presented with severe clinical manifestations should be referred to the veterinarians to avoid death.

### **3.0 MATERIALS AND METHODS**

#### **3.1. Study Area**

The study was conducted in Kelantan.

#### **3.2. Study Design**

A cross-sectional study was conducted among the pet cat owners living in Kelantan.

#### **3.3. Sources of Data**

Primary source of data was utilised in this study.

#### **3.4. Source Population**

The target population consisted of pet cat owners living in Kelantan who owned at least one indoor cat.

#### **3.5. Selection Criteria**

##### **3.5.1. Inclusion criteria**

Pet cat owners living in Kelantan who were willing to participate in this study.

##### **3.5.2. Exclusion criteria**

Pet cat owners living in Kelantan who were willing to participate in this study. Owners from medical and veterinary backgrounds were also excluded.

#### **3.6. Sampling Technique**

Simple random sampling technique was used in this study among pet cat owners living in Kelantan.

### **3.7. Sampling Procedure**

The questionnaire was distributed among pet cat owners in Kelantan via online platforms such as WhatsApp, Facebook and Instagram. 100 respondents were randomly selected

### **3.8. Data Collection Tools**

The data was collected by using questionnaire made using Google Form. The questionnaire consisted of 4 parts, A, B, C and D. Part A collected the data on demographic details. Part B collected the data on knowledge, Part C on attitude and Part D on practices. The questionnaire was developed solely for this study as there was no available study made to be adopted.

### **3.9. Data Collection**

Data was collected online between November 2022 until mid-December 2022. Gender, age, and district where they live in were included in the questionnaire. Data for level of knowledge, attitude and practices was collected by answering the questionnaire in Part B, C and D of the questionnaire.

### **3.10. Data analysis**

The data was then converted into Google Spreadsheet and was analysed in it. Analysis conducted only involved the percentage of positive and negative response. The analysis was conducted by using Microsoft Excel. Evaluation or determination of the KAP level was then carried out following this scale:

Good	: >50%
Moderate	: 26% - 50%
Poor	: 0% - 25%

## 4.0 RESULTS

Questionnaires were randomly distributed to the 100 respondents in Kelantan. The respondents consist of individuals younger than 21 years old, 21 – 25 years old, 26 – 30 years old, 31 – 35 years old, 36 – 40 years old and over 40 years old. All the respondents completed and returned the 100 questionnaires. The results are presented as below. The questionnaire comprises 4 parts which are:

Part A: Demographic Profile

Part B: Knowledge

Part C: Attitude

Part D: Practices

The results obtained are categorised into good, moderate and poor based on the range below:

Good	: >50%
Moderate	: 26% - 50%
Poor	: 0% - 25%

### 4.1. Demographic Details

This section comprises gender, age and district where the respondent lives. This data will be used to relate the level of knowledge, attitudes, and practices on indoor plant poisoning in pet cats among pet owners in Kelantan.

#### 4.1.1. Gender

The respondents comprise 26% male and 74% female (refer Table 4.1)

Table 4.1: Frequency and percentage of the respondent's gender

Gender	Frequency (f)	Percentage (%)
Male	26	26

Female	74	74
Total	100	100

#### 4.1.2. Respondent's age

Majority of respondent's age are 21 - 25 years old. The percentage is about 64% while 10% (less than 21 years old), 9% (26 - 30 years old), 8% (31 - 35 years old), 6% (36 - 40 years old) and more than 40 years old is about 3% (refer Table 4.2)

Table 4.2 : Frequency and percentage of the respondent's age

Age	Frequency (f)	Percentage (%)
< 21 years old	10	10
21 - 25 years old	64	64
26 - 30 years old	9	9
31 - 35 years old	8	8
36 - 40 years old	6	6
> 40 years old	3	3

#### 4.1.3. District where respondent lives

Majority of respondent lives in Kota Bharu which is about 33%, followed by Tanah Merah by 22%, Pasir Mas 10%, Machang 7% and others (refer Table 4.3)

Table 4.3 : Frequency and percentage of the district where the respondent lives

District	Frequency (f)	Percentage (%)
Bachok	3	3
Gua Musang	2	2
Jeli	4	4
Kota Bharu	33	33
Kuala Krai	4	4
Lojing	4	4
Machang	7	7
Pasir Mas	10	10
Pasir Puteh	6	6
Tanah Merah	22	22
Tumpat	5	5

#### 4.2. Knowledge on Indoor Plant Poisoning in Pet Cats among Pet Owners living in Kelantan

Among the respondents, 68% are aware of plant poisoning in an animal while 32% are not. Majority of the respondents, 57%, are aware of indoor plant poisoning in pet cats. Of respondents, 58% know that snake plants are poisonous to cats. Majority of the respondents, 70%, knows that indoor plant poisoning in pet cats can lead to sudden death. Of respondents, only 44% know that aloe vera leaf is safe to be consumed by the cats. Majority of the respondents, 91%, know that pet kittens are more at risk of indoor plant poisoning. Of respondents, 95% know that a newly

bought poisonous indoor plant should be placed beyond the reach of the pet cats. Majority of the respondents, 94% know that protruded tongue, vomiting and behavioural changes are the signs to look for in case of indoor plant poisoning. (Refer Table 4.4).

Table 4.4 : Score of knowledge of practice on indoor plant poisoning in pet cats among pet owners living in Kelantan based on the frequency and percentage

Knowledge	Frequency (f) & Percentage (%)		Score
	Yes	No	
Aware of plant poisoning in animal	68	32	Good
Aware of indoor plant poisoning in pet cats	57	43	Good
Snake plant is poisonous to cats	58	42	Good
Indoor plant poisoning in pet cats can lead to sudden death	70	30	Good
Aloe vera leaf is safe to be consumed by	44	56	Moderate

the cats			
Pet kittens are more at risk of indoor plant poisoning	91	9	Good
A newly bought poisonous plant should be placed beyond the reach of pet cats	95	5	Good
Protruded tongue, vomiting and behavioural changes are the signs to look for in case of indoor plant poisoning in pet cats	94	6	Good

#### 4.3. Attitude on Indoor Plant Poisoning in Pet Cats among Pet Owners living in Kelantan

Among the respondents, 96% agree that they bring the pet cats to the veterinarian as soon as possible after ingestion of the poisonous indoor plant. Majority of the respondents, 69%, agree that they do some research before getting an indoor plant.



Of respondents, 73% agree that they clean the oral cavity of the cat if suspected it had ingested a possibly poisonous indoor plant. Majority of the respondents, 79%, agree that they provide toys for cats to prevent boredom that can lead to ingestion of possibly poisonous indoor plants. Of respondents, 83% agree that they barricade poisonous indoor plants with wire mesh or put them in a room beyond the reach of the pet cats. Majority of the respondents, 85%, agree that they monitor any kitten with excessive curiosity and indiscriminate eating behaviour. Of respondents, 97% agree that pet owners should pay more attention to the indoor plant poisoning of their pets. (Refer Table 4.5).

Table 4.5 : Score of level of attitude on indoor plant poisoning in pet cats among pet owners living in Kelantan based on the frequency and percentage

Attitude	Frequency (n) & Percentage (%)		Score
	Yes	No	
Bring the pet cats to the veterinarian as soon as possible after ingestion of the poisonous indoor plant	96	4	Good
Do some research before getting an indoor plant	69	31	Good
Clean the oral cavity of the cat	73	27	Good

if suspected it had ingested a possibly poisonous indoor plant			
Provide toys for cats to prevent boredom that can lead to ingestion of possibly poisonous indoor plant	79	21	Good
Barricade poisonous indoor plants with wire mesh or put them in a room beyond the reach of the pet cats	83	17	Good
Monitor any kitten with excessive curiosity and indiscriminate eating behaviour	85	15	Good
Pet owners	97	3	Good

should pay more attention to the indoor plant poisoning of their pets			
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#### 4.4. Attitude on Indoor Plant Poisoning in Pet Cats among Pet Owners living in Kelantan

Majority of the respondents, 55%, agree that they observe for any bite mark on the poisonous indoor plant. Of respondents, 82% agree that they often spend time with pet cats to observe for any abnormal appearance or behaviour. Majority of the respondents, 54%, agree that they always do research regarding the indoor plant that they have in their home. Of respondents, 84% agree that they always check the location and operation hours of the nearby veterinarian. (Refer Table 4.6).

Table 4.6 : Score of level of practice on indoor plant poisoning in pet cats among pet owners living in Kelantan based on the frequency and percentage

Practice	Frequency (n) & Percentage (%)		Score
	Yes	No	
Observe for any bite mark on the poisonous indoor plant	55	45	Good
Often spend time with pet cats to observe	82	18	Good

for any abnormal appearance or behaviour			
Always do research regarding the indoor plant that they have in their home	54	46	Good
Always check the location and operation hours of the nearby veterinarian	84	16	Good

## 5.0 DISCUSSION

The level of knowledge, attitude and practices (KAP) on indoor plant poisoning in pet cats among pet owners in Kelantan was investigated. Among the respondents, majority of them are female (74%) and only 26% of them are male. Highest response comes from the age group of 21 to 25 years old with 64% and the lowest response is from 40 years and above with only 3% response. 33% of the respondents are from Kota Bharu and the lowest response are from Gua Musang with only 2%.

Current study showed that in terms of knowledge, the level of awareness of plant poisoning in animals is more than half, at 68%, which is good. However, it seems like not everyone that is aware of plant poisoning in animals, knows that there is indoor plant poisoning in pet cats because only 57% responded with 'Yes'. However, 57% is still considered as having good score in this study. Pet owners need to know indoor plants can cause poisoning in cats (Means & Wismer, 2018). This is because, based on the research that has been done, snake plant and aloe vera are some of the many indoor plants that can cause severe clinical manifestations in cats that require medical as well as surgical intervention (Fitria et al., 2022). Majority of them, 58%, know that snake plants are poisonous to cats, which is good. Majority of the respondents, 56%, did not know that aloe vera leaf is safe to be consumed by the cats, indicating a moderate score of knowledge. A study reported that, ingestion in humans will result in diarrhoea, hypokalaemia, pseudomelanosis coli, kidney failure and phototoxicity and hypersensitivity reactions (Guo & Mei, 2016). Almost all, 91% of the respondents know that pet kittens are more at risk of indoor plant poisoning, showing a good score of knowledge. A study has reported that cats, especially kittens, are at a high risk of ingesting a number of plants in the environment due to their curiosity and indiscriminate eating habits (Means & Wismer, 2018). 95% of the respondents know that they should place a newly bought poisonous indoor plant beyond the reach of the pet cats and 94% know that protruded tongue, vomiting and behavioural changes are the signs to look for in case of indoor plant poisoning in pet cats, indicating that the pet owners have a good knowledge.

For a study regarding pet owners' attitude when it comes to indoor plant poisoning in pet cats, 96% said that it is necessary to bring the pet cats to the veterinarian as soon as possible after ingestion of the poisonous indoor plant, showing a good score of attitude as

excessive ingestion of peace lilies can lead to severe oedema of throat and larynx which require surgical intervention where tracheostomy would have to be performed to allow the cat to breath (McKenzie, 2020). Among them, 69% said that they will do some research before getting an indoor plant and 73% said that they will clean the oral cavity of the cat if suspected it had ingested a possibly poisonous indoor plant, indicating a good attitude among them. In the case of peace lilies poisoning, if the cat ingested only a minute amount, owners could physically remove the plants from the oral cavity and flush them with clean water (McKenzie, 2020). 83% said that they will barricade poisonous indoor plants with wire mesh or put them in a room beyond the reach of pet cats while 85% said that they will monitor any kitten with excessive curiosity and indiscriminate eating behaviour, showing that there are a good level of attitude among the pet owners. Almost all respondents, 97% of them, agree that pet cat owners should pay more attention to the indoor plant poisoning of their pets, showing good attitude.

For a study regarding pet owners' practice when it comes to indoor plant poisoning in pet cats, 55% shared that they often observe for any bite mark on the poisonous indoor plant, indicating a good score of practice. 82% shared that they often spend time with their cat to observe for any abnormal appearance or behaviour of their cat, showing a good practice among the pet owners. A study conducted in Wistar rats to investigate the lethal dose of snake plant, revealed messy appearance and abnormal resting position of the subjects (Fitria et al., 2022). 54% shared that they always do research regarding the indoor plant that they have in their home and finally, 84% shared that they always check the location and operation hours of the nearby veterinarian, proving that the pet owners have a good level of practice.

Majority of the respondents showed a satisfactory level of knowledge, attitude and practices on indoor plant poisoning in pet cats among pet owners in Kelantan. For all questions, more than 50% of the respondents managed to show an appropriate response regarding the knowledge, attitude and practices.

## 6.0 CONCLUSION AND RECOMMENDATION

Indoor plant poisoning in pet cats is one of the causes of poisoning in pet cats all over the world that can cause various problems. This study revealed that more than half of the respondents said that they know about indoor plant poisoning in pet cats. In terms of attitude, more than half of the respondents showed an appropriate attitude towards indoor plant poisoning in pet cats' cases. With more than half of the respondents mentioning that they practise an appropriate response, that determines that there is a satisfactory level of knowledge, attitude and practices regarding indoor plant poisoning in pet cats among pet owners living in Kelantan.

The current study can be improved by increasing the sample size in order to get a more significant result. Furthermore, an awareness campaign regarding poisonous plant species can be conducted from time to time because based on the result, it seems that even though the respondent displays an appropriate attitude and practices towards poisoning cases, many are still unaware that some indoor plants are poisonous and are not taking initiative to do some research, possibly because they think that cat, a carnivorous animal, would not ingest any plant. Therefore, awareness campaigns such as by inviting an expert to give a talk on this topic at university level, organising an event that involves exposure to this topic at school level and producing a virtual content that can be shared all over social media seem like a very appropriate recommendation.

## REFERENCES

- Bertero, A., Fossati, P., & Caloni, F. (2020). Indoor companion animal poisoning by plants in Europe. *Frontiers in Veterinary Science*, 7. <https://doi.org/10.3389/fvets.2020.00487>
- Caloni, F., Cortinovis, C., Rivolta, M., Alonge, S., & Davanzo, F. (2013). Plant poisoning in domestic animals: Epidemiological data from an Italian Survey (2000-2011). *Veterinary Record*, 172(22), 580–580. <https://doi.org/10.1136/vr.101225>
- Campbell, A. (1998). Poisoning in small animals from commonly ingested plants. *In Practice*, 20(10), 587–591. <https://doi.org/10.1136/inpract.20.10.587>
- Fitria, L., Gunawan, I. C., Sanjaya, W. B., & Meidianing, M. I. (2022). Single-dose acute oral toxicity study of chloroform extract of snake plant (*sansevieria trifasciata prain.*) leaf in wistar rats (*rattus norvegicus berkenhout, 1769*). *Journal of Tropical Biodiversity and Biotechnology*, 7(1), 69389. <https://doi.org/10.22146/jtbb.69389>
- Guo, X., & Mei, N. (2016). Aloe Vera: A review of toxicity and adverse clinical effects. *Journal of Environmental Science and Health, Part C*, 34(2), 77–96. <https://doi.org/10.1080/10590501.2016.1166826>
- Gupta, P. K. (2018, April 6). Poisonous plants. *Illustrated Toxicology*. Retrieved June 7, 2022, from <https://www.sciencedirect.com/science/article/pii/B9780128132135000110>
- Halim, H. (2021, August 13). 20 easy-to-care indoor plants that you can get in Malaysia. *Malaysia Homie*. Retrieved June 7, 2022, from <https://malaysiahomie.com/20-easy-to-care-indoor-plants-in-malaysia/>
- Keck G, Berny P, Buronfosse F, Pineau X, Vermorel E, Rebelle B, Buronfosse T. Veterinary toxicovigilance: objectives, means and organisation in France. *Vet Res Commun*. 2004 Aug;28 Suppl 1:75-82. doi: 10.1023/b:verc.0000045382.46405.f3. PMID: 15372933.
- Knuth, M. J., Khachatryan, H., & Hall, C. R. (2021). How consistent are consumers in their decisions? investigation of houseplant purchasing. *Behavioral Sciences*, 11(5), 73. <https://doi.org/10.3390/bs11050073>
- McBratney, S. (2020, October 16). Plant poisonings: Symptoms, treatment & first aid. *Healthgrades*. Retrieved December 18, 2022, from <https://www.healthgrades.com/right-care/symptoms-and-conditions/plant-poisonings#:~:text=Plant%20poisonings%20are%20the%20adverse,or%20roots%20of%20the%20plant>



- McKenzie, R. (2012). Australia's poisonous plants, fungi and cyanobacteria: A guide to species of medical and veterinary importance. CSIRO Publishing.
- Means, C., & Wismer, T. (2018). An overview of trends in animal poisoning cases in the United States: 2011 to 2017. *Veterinary Clinics of North America: Small Animal Practice*, 48(6), chrome 899–907. <https://doi.org/10.1016/j.cvsm.2018.07.010>
- Osweiler, G.D., 1996. Plant-related toxicoses. In: Osweiler, G.D. (Ed.), *Toxicology*. Williams and Wilkins, Media, PA, USA, pp. 361–407.
- Rumbeiha, W. K., Francis, J. A., Fitzgerald, S. D., Nair, M. G., Holan, K., Bugyei, K. A., & Simmons, H. (2004). A comprehensive study of Easter lily poisoning in cats. *Journal of Veterinary Diagnostic Investigation*, 16(6), 527–541. <https://doi.org/10.1177/104063870401600607>
- Salgado, B. S., Monteiro, L. N., & Rocha, N. S. (2011). Allium species poisoning in dogs and cats. *Journal of Venomous Animals and Toxins Including Tropical Diseases*, 17(1), 4–11. <https://doi.org/10.1590/s1678-91992011000100002>
- Sturgeon, K., Campbell, A., 2008. A comparison of Allium species poisoning in cats and dogs. *Clinical Toxicology* 46, 385.
- Vandenbroucke, Virginie & van Pelt, Henk & Đê, Phan & Croubels, Siska. (2010). Animal poisonings in Belgium: A review of the past decade. *Vlaams Diergeneeskundig Tijdschrift*. 79. 259-268

## APPENDICES

# KNOWLEDGE, ATTITUDE AND PRACTICES STUDY ON INDOOR PLANT POISONING IN PET CATS AMONG PET OWNERS IN KELANTAN

Dear respondent,

Kindly spare a few minutes to truthfully complete this questionnaire to help me in my final year project. I am Muhammad Izad Bin Mohd Noor from the Faculty of Veterinary Medicine, Universiti Malaysia Kelantan.

*Responden yang dihormati,*

*Sila luangkan beberapa minit untuk melengkapkan soal selidik ini dengan telus bagi membantu saya untuk melengkapkan projek tahun akhir saya. Saya, Muhammad Izad Bin Mohd Noor, adalah mahasiswa daripada Fakulti Perubatan Veterinar, Universiti Malaysia Kelantan.*

\* Required

Appendix A : Front page of the KAP

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