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Hair and saliva analysis fails to accurately identify atopic dogs or differentiate real and fake samples

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Background – The availability of direct-to-consumer medical testing for human and veterinary health conditions has increased in recent years. For allergies, several companies market proprietary hair and saliva tests directly to pet owners. These tests have not been validated and there is limited regulatory oversight for such tests in veterinary medicine.

Hypothesis/Objectives – To examine the accuracy and reproducibility of a commercial direct-to-consumer hair and saliva allergen test.

Animals – Seven healthy animals (six dogs, one cat); six animals (five dogs, one cat) with atopic dermatitis; 11 samples of synthetic fur and sterile saline.

Methods and materials – Duplicate animal hair and saliva, and 11 synthetic fur and saline samples were collected (total samples 35) and submitted to the company for analysis, yielding 12,075 outcomes for statistical analysis.

Results – Positive test results were provided by the direct-to-consumer pet allergy for all submitted samples, including synthetic fur and saline. The test results for healthy and atopic animal samples were no different from each other or from synthetic fur and saline samples. Reproducibility for paired samples was not different from random chance. The results for real animals correlated strongly with results for synthetic fur and saline samples ($r = 0.71$, $P < 0.05$).

Conclusions and clinical importance – The direct-to-consumer hair and saliva test for pet allergies examined in this study performed no better than chance and the results were not reproducible.

Introduction

A variety of conditions can cause pruritus in dogs and cats, including food- and/or environmentally triggered atopic dermatitis (atopy).[1,2] No specific diagnostic tests exist for canine and feline food- and environmentally triggered atopy; instead, veterinarians make a diagnosis of atopy after evaluating the pattern of pruritus, performing a physical examination and excluding other causes of pruritus.[1–3] For environmentally triggered atopy, intradermal or serological testing can help identify allergens for avoidance or inclusion in allergen immunotherapy such as plant pollens, moulds or house dust mites.[1–3] For food allergies, no validated scientific test exists in dogs and cats; instead, the diagnosis is made by performing dietary food trials using novel protein or hydrolysed diets followed by individual food item challenges to identify specific dietary allergens.[1,2,4–8]

Several companies in the USA market proprietary tests directly to pet owners for the evaluation of pet allergic conditions. Pet owners are asked to provide various samples, such as pet hair and saliva, and then, putative food and environmental allergen test results are provided to the pet owner. The results of such tests have not been validated, and there is limited regulatory oversight for these direct-to-consumer tests in veterinary medicine. If these tests fail to correctly identify allergens, the diagnosis and treatment of atopy and other allergic disease by a veterinarian could be delayed while pet owners try to treat (unsuccessfully) a battery of nonexistent allergens. Two studies have demonstrated that such tests, performed on saliva and hair, failed to match the clinical diagnosis of atopic dermatitis (AD) and could not differentiate between healthy and atopic dogs.[9,10]

In order to further examine the validity of hair and saliva testing, we evaluated the results of a previously unreported commercially available allergen test that is offered directly to pet owners. We examined whether the test could replicate results for pairs of samples submitted under different names, whether the test could differentiate between atopic and healthy dogs and cats, and finally, whether the test could identify synthetic fur and sterile saline samples as being "nonanimal." We hypothesized that the test would fail to differentiate between allergic and nonallergic patients, and would not distinguish between animal and nonanimal samples.

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Methods and materials

Sample collection and submission

Sampling kits were obtained directly from the company (Glacier Peaks Holistics; Eureka, MT, USA). Each sampling kit consisted of a plastic bag containing a comb for hair collection and two cotton swabs for saliva sampling. Instructions provided with the kits stated that the hair could be either combed or trimmed for submission.

For each submission, a new and unopened kit was utilized for sample collection. Hair and saliva samples were obtained from six dogs and one cat considered to be healthy, and five dogs and one cat with AD. For animals with AD, the diagnosis was made according to published guidelines.[11] Additionally, 11 synthetic hair samples were taken from five newly purchased stuffed toy animals and paired with cotton swabs saturated with sterile saline. To avoid inadvertent sample contamination, the toys were bagged in sealed containers at the time of purchase. The clinicians who performed the sampling and submitted the samples wore gloves when handling the samples. Additionally, a sterile needle and syringe were used to extract the saline before dripping it on the company provided swabs. To confirm that the hairs from the toys were synthetic instead of real animal hair, the authors microscopically examined a sample from each toy animal. This evaluation also confirmed that no potentially contaminating house dust mites, storage mites, or moulds were visible microscopically on the toy animals. The same author collected all samples (i.e. dog hair, dog saliva, synthetic hair, sterile saline) to avoid sampling variability. No institutional approval was required for the study as there was no risk to the living patients, clients or investigators. The owners of the dogs and cats provided informed consent for participation.

Duplicate samples were collected from five atopic and six normal animals, and each was submitted under a different name/identifier. A single atopic dog and a single normal dog did not have replicates submitted. Eleven replicates of the synthetic fur and saline were submitted, each under a different name and identifier. Therefore, a total of 35 samples were submitted for analysis.

Statistical analyses

The test for this company is described to be from a "biofeedback device" that identifies over 300 food and environmental "stressors and triggers (Pet Wellness Life Stress Scan. Available at: https://glacierpeakholistics.com/products/pet-wellness-life-stress-scan-1?variant=38717885892. Accessed Nov 27, 2018). For each sample submission, the test results comprised 12 "energetic imbalances of the immune system," 201 dietary items and 132 environmental "stressors and triggers." These 345 potential problems were provided in list format (Figure 1a,b). Therefore, for the 35 submitted samples the company test results yielded 12,075 outcomes for our analysis.

To examine test–retest accuracy (replicability), initially we compared the agreement between each of the pairs of results from all real animals (six healthy and five atopic) using a linearly weighted Cohen's kappa, yielding 11 kappa values. We then randomly selected one of the 11 synthetic fur and saline results, and compared each of the other 10 results obtained for the synthetic fur and saline samples with this result using Cohen's kappa, yielding 10 kappa values. Once all of the kappa values were generated (11 for real animals and 10 for synthetic fur and saline), we compared the kappa values for the synthetic fur and saline pairs with the kappa values for the real animal pairs using a Student's *t*-test for independent samples. We hypothesized that if the test was "internally valid" (i.e. reproducible within individuals), the agreement for real animal pairs would be higher than that for synthetic fur and saline pairs.

Next, to examine whether the number of triggers identified for healthy animals, atopic animals, or synthetic fur and saline samples differed, we compared the total number of triggers in each type of sample source (healthy animals, atopic animals, toys) using a one-way ANOVA. We assumed that atopic animals should have more triggers identified than healthy animals, and toys (synthetic fur and saline samples) should have the fewest triggers identified, if any.

Finally, because various triggers appeared to be either over- or under-represented, we performed a linear regression analysis to evaluate the percentage of instances; a specific trigger (environmental or dietary) was identified in real dogs and toy animals (synthetic fur and saline). We assumed that if the test was simply inaccurate, then there would be no association between the frequency of trigger identification in real animals and toys, because synthetic fur should yield random results. All statistical analyses were performed using MedCalc Statistical Software v18.11 (MedCalc Software bvba; Ostend, Belgium; http://www.medcalc.org; 2018).

Results

The company provided results for all submitted samples, including those comprising synthetic fur from toys and saline.

Evaluation of the data demonstrated that they were not normally distributed, with certain dietary triggers, either individually or as a group, being over-represented in both the real animals and synthetic fur and saline samples (Table S1). Specifically, chicken, salmon, shellfish, dairy products, grains, ethoxyquinol, food colourings and food preservatives were identified in >60% of the samples, regardless of the source of the sample (animal or toy); some approached 100% frequency. Other triggers, such as fruits, nuts and vegetables, were rarely identified in any sample. Additionally, *c.*80% of all stressors or triggers were identified as problematic in at least one healthy animal, one atopic animal and one synthetic fur sample (Figure 2).

The number of dietary triggers for healthy animals, atopic animals, and synthetic fur and saline did not differ (median number of triggers 53, 59 and 55, respectively, $P = 0.57$; Table S2). Similarly, the number of environmental triggers for healthy dogs, atopic dogs, and synthetic fur and saline samples did not differ (median number of triggers 20, 22 and 22, respectively, $P = 0.7$; Table S2). The level of agreement, as determined by Cohen's kappa, between pairs of samples for dietary triggers did not differ between real animals and synthetic fur and saline (mean $\kappa_{real} = 0.35$ versus mean $\kappa_{synth} = 0.35$, $P = 0.94$). Similarly, the level of agreement between pairs of samples for environmental triggers did not differ between real animals and synthetic fur and saline (mean $\kappa_{real} = 0.06$ versus mean $\kappa_{synth} = 0.07$, $P = 0.71$).

The frequency of dietary triggers identified in real animals matched that of dietary triggers in synthetic fur and saline ($r^2 = 0.78$; $P < 0.0001$; Figure 3a). The frequency of environmental triggers identified in real animals showed a weaker association with that of environmental triggers in synthetic fur/saline ($r^2 = 0.21$; $P < 0.0001$; Figure 3b).

Discussion

Our data demonstrate that the hair and saliva allergy assay examined in this study cannot differentiate toy fur and saline samples from real animal hair and saliva samples. Furthermore, the test–retest results suggest that the assay cannot identify the same triggers (dietary or environmental) in real animals, and the agreement

a

OWNER:
PET NAME:
DATE:

Glacier Peak Holistics
Pet Wellness Life Stress Scan

Items Highlighted in RED are Stressors and Triggers

Veterinarian: N/A			Store:	Website		Specie: Dog	Breed: Unknown
Pet's Current Diet:	Kibble	Raw	Home-Cooked	Canned	Other / Unknown	Sex: Male	Age: 1 1/2 years

Food Panel - Some items on this panel can be toxic for pets. We encourage you to research toxic foods for pets before feeding raw , home-cooked or other "people" food.

Proteins	Legumes	Vegetables		Fruit	Nuts and Seed	Spices	Misc. Items
Beef	Adzuki Bean	Artichoke	Spinach	Agrumi	Almond[2]	Allspice	Bakers Yeast
Bison / Buffalo	Black Turtle Bean	Asparagus	Sprouts (bean)	Apple	Brazil Nut	Anise	Beet Pulp
Elk	Black-eyed Pea	Avocado[2]	Squash (summer)	Apricot	Cashew	Cinnamon	Brewers Yeast
Goat	Fava Bean	Beet	Squash (winter)	Banana	Chia Seed	Coriander	Carob
Kangaroo	Garbanzo/ Chickpea	Bok Choy	Sweet Potato	Blackberry	Dill Seed	Curry	Coffee
Lamb	Great Northern Bean	Broccoli	Tomato	Blueberry	Filbert / Hazelnut	Ginger	Garlic
Llama	Kidney Bean	Brussel Sprouts	Turnip	Boysenberry	Flaxseed / Oil	Hops	Gluten
Moose	Lentils	Cabbage	Zucchini	Cantalope	Hemp	Mint	Honey
Pork/Ham	Lima Bean	Carrot		Coconut[2]	Pecan	Mustard	Kelp
Rabbit	Navy Bean	Cauliflower	**Grain**	Cranberry	Pine Nut	Nutmeg	Malt
Venison	Peanut/ Oil	Celery	Amaranth	Currant	Pistachio	Paprika	Molasses
Yak	Pinto Beans	Chile Pepper	Barley	Date	Sesame Seed / Oil	Rosemary	Nutritional Yeast
	Green Pea/ Split Pea	Collard Greens	Buckwheat	Fig	Soy - Lecithin[2]	Sage	Parsley
Poultry		Cucumber	Corn	Grapefruit	Sunflower Seed / Oil	Turmeric	Sugar
Chicken / Egg	**Oils**	Dandi Greens	Millet	Honeydew	Walnut	**Additives**	Tapioca
Duck / Egg	Canola	Eggplant	Oat	Kiwi		Black Pepper	Tea
Emu	Cottonseed	Green Beans	Quinoa	Lemon		Casein	Tobacco
Goose	Fish	Green Pepper	Rice / White [2]	Lime	Chondroitin	Distilled Vinegar	Vanilla
Ostrich	Krill	Jicama	Rice / Brown[2]	Mango	Glucosamine	Ethoxyquin	
Quail / Pheasant	Menhaden Fish	Kale/ Chard	Rye	Nectarine		Food Colorings	**Toxic Foods**
Turkey	Safflower	Lettuce	Spelt	Orange		Food Preservatives	Beer
	Salmon	Mushroom	Wheat	Papaya		Gelatin	Chocolate
	Vegetable	Mustard Green		Peach		Montmorillonite Clay	Grape
Fish		Napa Cabbage	**Milks / Dairy**	Pear		Nutrasweet	Leek
Anchovy [2]	Pollock	Okra	Dairy Milk[4]	Pineapple		Salt	Macadamia Nut
Cod [2]	Salmon [2]	Olive[2]	Goat Milk[4]	Plum		Yeast Culture	Onion
Fish Meal[2]	Sardine	Parsnip	Sheep Milk[4]	Quince			Wine
Haddock	Shark	Potato	Cheese	Raspberry			Xylitol
Herring [2]	Shellfish[3]	Pumpkin / Seed	Cottage Cheese	Rhubarb			
Mackerel	Tuna	Radish	Whey	Strawberry			
Menhaden fish [2]	Trout	Red Pepper	Yogurt	Watermelon			

[2] Describes the food source including oils, waters, milks
[3] Clam, Crab, Lobster, Mussels, Oysters, Shrimp
[4] Pasteurized

b

OWNER:
PET NAME:
DATE:

Glacier Peak Holistics
Pet Wellness Life Stress Scan

Items Highlighted in RED are Stressors and Triggers

Petro Chemical	Enviro Chems	Insects	Weeds/ Flowers	Grasses	Trees	Pollens	Dust
Alcoloid	Alcohol (rubbing)	Ants	Burdock	Alfalfa	Ash	Alfalfa	Chalk dust
Benzol	Ammonia	Bee	Dandelion	Barley Grass	Aspen	Cocklebur	Dust (airborne)
Chloroflor	Asbestos	Cockroach	Dill Weed	Bear Grass	Beech	Dandelion flower	Dust (carpet/upholstery)
Dry cleaning	Benzene (Cosmetics)	Flea	Dock Sorrel	Bermuda	Birch	Flower	Flock dust
Exhaust Fumes	Borax	Mites	Foxtail	Brome	Cedar / shavings	Hazel	Straw/Hay dust
Furniture stripping	Chlorine	Mosquito	Lupine	Centipede	Cottonwood	Heather	
Hexane*	Cleaning products	Spider	Nettle	Crabgrass	Cypress	Honeysuckle	**Misc.**
Industrial	Cleaning solvents	Tick	Plantain	Fescue	Elder	Laburnum	Cigarette smoke
Methylene/Chloride	Construction	Wasp	Rag Weed	Goldenrod	Elm	Mugwort	Coal - Asphalt
Methelethyl Ketone	Cosmetics	Black fly	Red Clover	Kent. Blue Grass	Hawthorn	Nettle	Down / Feathers
Motor oil	Formaldehyde		Sagebrush	Johnson	Hickory	Oleander	Horse
Natural gas	Kapok / Stuffing		Thistle	Orchard	Juniper	Plane	Mouse fur
Paint	Laundry soap			Privet	Maple	Prickly Pear	Wood smoke
Phosphorous	Perfume			Red Top	Marshelder	Pussy Willow	Wool
Plastic	Sulfate			Rye	Mesquite	Red Clover	
Polypropyl	Toluene***			Sweet Grass	Mulberry		**Noxious Energy**
Polyurethane				Sweet Vernal	Oak		Electronics[6]
Propylene glycol**				Timothy	Olive		
Porphyrin					Palm		
Sterol					Pine		
Sulfyl					Poplar		
Tetra Chloride					Redwood		
Vinyl					Walnut		
Wood alcohol							
Xylene							

*Disclaimer - The information provided by this scan is intended for educational and nutritional purposes only and is not intended to diagnose, treat, cure, or prevent any disease. It is not intended as conventional veterinary medical practice advice or to replace the advice or attention of certified veterinarians. You may wish to consult your holistic veterinarian before beginning or making changes in your pets' diet, nutritional supplementation or exercise program. The statements on this scan have not been evaluated by the Food and Drug Administration nor are they approved by the Board of Veterinary Medicine. If you do not have a Holistic Veterinarian, you can find one in your area by visiting http://www.ahvma.org/

Health & Wellness
GLACIER PEAK HOLISTICS
canine - equine - feline

* Used as a solvent in the extraction of oil from seeds (soybean, cottonseed, flaxseed, safflower seed and others
** Used as a humectant, solvent and preservative in food and shampoo
*** most common in paint thinners

[6] Cell Phones/Portable Phones, Computers, Home Theaters, Microwaves, Stereo Systems, Televisions, etc.

Figure 1. (a) Sample report from the direct-to-consumer hair and saliva allergy testing company. A colour-coding scheme is used to identify problematic triggers and stressors. Dietary triggers and stressors are highlighted in red. (b) Sample report from the direct-to-consumer hair and saliva allergy testing company. A colour-coding scheme is used to identify problematic triggers and stressors. Environmental triggers and stressors are highlighted in red.

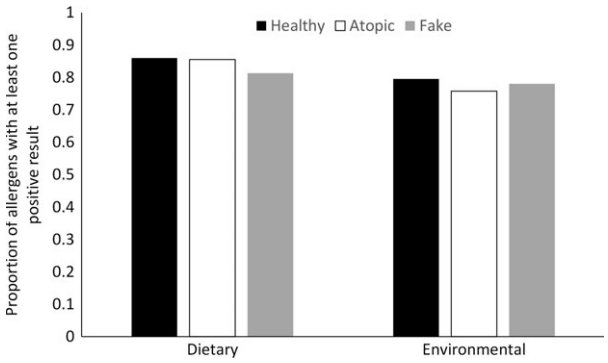

Figure 2. Proportions of dietary and environmental triggers or stressors identified as problematic in at least one healthy animal (n = 13), one atopic animal (n = 11) and one synthetic fur and sterile saline sample (n = 11).

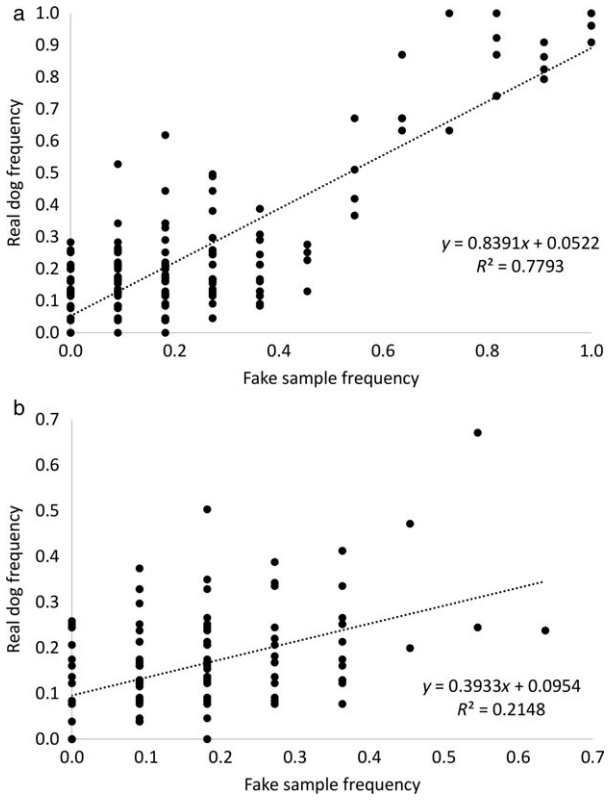

Figure 3. (a) Scatter plots and regression lines of frequency of 201 dietary triggers or stressors in real animals (n = 24) and synthetic fur and sterile saline samples (n = 11).
(b) Scatter plots and regression lines of frequency of 132 environmental triggers or stressors in real animals (n = 24) and synthetic fur and sterile saline samples (n = 11).

between paired samples does not differ from random chance agreement (defined as the agreement between pairs of synthetic fur/saline samples).

Our results are similar to those of previous studies in humans and animals that have consistently documented that allergic conditions cannot be diagnosed using hair or saliva sample analysis.[9,10,12–14] Our observation of a strong association between real and fake samples raises the concern that no actual analysis is being performed by this direct-to-consumer health testing company. If the assay was simply inaccurate, submitted samples of synthetic fur and saline would fail to yield interpretable results. As an analogy, DNA analysis by PCR of synthetic fur and saline would fail to produce any bands, even if the primers used in the analysis were not specific for one region of DNA. However, our regression analysis demonstrates that the food items identified as "triggers" with very high frequency in real animals also were identified with the same frequency in the synthetic fur and saliva samples; similarly, those identified with low frequency in real animals also were identified with the same frequency in synthetic fur and saliva samples, resulting in a very high coefficient of determination (Figure 3a). The lower coefficient of determination for environmental items can be explained by the lack of very high-frequency items: most environmental items were identified in <40% of the samples (Figure 3b). Had the synthetic fur and saliva samples provided random or uninterpretable results, no association between real and fake samples should exist.

The promotion and marketing of unreliable health tests to consumers can result in real harm by delaying the time to correct diagnosis and institution of appropriate treatment. Additionally, results from such tests confuse the pet owner and veterinarian and use limited financial resources that could be better applied to appropriate testing and treatment. For the dog or cat with severe allergic conditions, misdiagnosis can increase animal suffering and client frustration. The company indicates in a disclaimer, in its sample testing submission packet, that "the information provided by this assessment is intended for educational and nutritional purposes only and is not intended to diagnose, cure or prevent any disease." However, the test evaluated in this study reported many food "triggers" for each submitted sample. Pet owners, unaware that hair and saliva analysis is not a valid test for allergic conditions in dogs and cats, could erroneously believe that they need to restrict the diets of their pets but, as test results are inaccurate, they base their food choices on the wrong diagnosis. Furthermore, diet change based on these reports by pet owners without the guidance of a nutritionist or veterinarian could result in the exclusion of dietary ingredients and thus the feeding of a nutritionally imbalanced and/or deficient diet.[15]

The company evaluated in this study describes the use of a biofeedback device on submitted samples for its "allergy test" results. We could find no peer-reviewed published research studies supporting the use of biofeedback analysis on hair or saliva samples for health diagnosis or treatment. Thus, it is unknown what potential factors could have resulted in the identification of positive results on synthetic hair and sterile saline samples by this company. However, to avoid inadvertent sample contamination in our study, we took specific precautions when sampling the synthetic hair and saline. The author who performed the sampling and submitted the samples wore gloves when handling the samples. Additionally, a sterile needle and syringe were used to extract the saline before applying it to the company provided swabs. Therefore, we do not believe the positive results provided by the company on the synthetic fur and saline samples are from sample contamination. Furthermore, if contamination had occurred, we

would expect high agreement between pairs of samples, given that the same investigator collected all the samples. We could not control for contamination during manufacture or packaging of the toy samples, but failed to detect contamination via microscopic evaluation of synthetic fur samples from the toys. Had such contamination occurred, we would expect to find the synthetic fur and saline submissions to agree with each other (because they would be replicates, with the same contaminants); this did not occur.

In summary, similar to prior studies investigating tests from other companies, the results of our study demonstrate that the specific hair and saliva test for pet allergic conditions that we evaluated lacks precision, accuracy and repeatability and should not be used in the diagnosis or treatment of allergic conditions in companion animals.

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Supporting Information

Additional Supporting Information may be found in the online version of this article.

Table S1. Frequencies of identification of dietary and environmental triggers in healthy dogs (n = 13), atopic dogs (n = 11) and synthetic fur and saliva samples (n = 11).

Table S2. Number of stressors or triggers identified for each healthy animal (n = 13), each atopic animal (n = 11) and each fake animal (n = 11) submission.

Résumé

Contexte – La disponibilité de tests médicaux directement accessibles aux consommateurs pour les conditions de santé humaine et animales a augmenté ces dernières années. Pour les allergies, plusieurs sociétés fournissent des tests de salive et de poils directement aux propriétaires d'animaux. Ces tests n'ont pas été validés et n'ont qu'une surveillance réglementaire limitée en médecine vétérinaire.

Hypothèses/Objectifs – Examiner la précision et la reproductibilité d'un test commercial d'allergènes sur poils et salive en vente directe aux consommateurs.

Sujets – Sept animaux sains (six chiens, un chat); six animaux atopiques (cinq chiens, un chat); 11 échantillons de poils synthétiques et de solution saline stérile.

Matériel et méthode – Des doubles de salive et de poils d'animaux et 11 poils synthétiques et échantillons de solutions saline ont été collectés (35 échantillons totaux) et soumis au laboratoire pour analyse, menant à 12 075 résultats à analyser.

Résultats – Des résultats positifs ont été fournis pour tous les échantillons testés, y compris les poils synthétiques et la solution saline. Les résultats des tests pour les échantillons d'animaux sains et atopiques ne montraient pas de différence entre eux ou par rapport aux échantillons de poils synthétiques ou de solution saline. La reproductibilité par échantillons appariés au hasard ne montrait pas de différence. Les résultats pour les vrais animaux montraient une forte corrélation avec les résultats des poils synthétiques et la solution saline ($r = 0.71$, $P < 0.05$).

Conclusions et importance clinique – Le test pour allergies sur poils et salive en vente directe aux consommateurs examiné dans cette étude montre des résultats équivalents au hasard et non reproductibles.

Resumen

Introducción – la disponibilidad de pruebas médicas directas al consumidor para afecciones de salud humana y veterinaria ha aumentado en los últimos años. Para las alergias, varias compañías comercializan pruebas de cabello y saliva patentadas directamente a los dueños de mascotas. Estas pruebas no han sido validadas, y existe una supervisión reguladora limitada para dichas pruebas en medicina veterinaria.

Hipótesis/objetivos – examinar la precisión y la reproducibilidad de una prueba comercial de alérgenos para el cabello y la saliva dirigida al consumidor.

Animales – Siete animales sanos (seis perros, un gato); seis animales (cinco perros, un gato) con dermatitis atópica; 11 muestras de pieles sintéticas y salinas estériles.

Métodos y materiales – se recogieron muestras de pelo y saliva de animales por duplicado, y se recogieron 11 muestras de pelo sintético y muestras de suero salino (muestras totales 35). Las muestras se enviaron a la compañía para su análisis, lo que arrojó 12,075 resultados para el análisis estadístico.

Resultados – se obtuvieron resultados positivos de la prueba para alergia a mascotas de todas las muestras remitidas, incluyendo pieles sintéticas y solución salina. Los resultados de las pruebas para muestras de animales sanos y atópicos no fueron diferentes entre sí o de las muestras de piel sintética y suero salinao. La reproducibilidad para muestras pareadas no fue diferente de resultados al azar. Los resultados para animales reales se correlacionaron altamente con los resultados para muestras de piel sintética y salina (r = 0,71, P<0.05).

Conclusiones e importancia clínica – la prueba del cabello y la saliva dirigida al consumidor para alergias a las mascotas examinadas en este estudio no dio mejores resultados que si fuesen al azar, y los resultados no fueron reproducibles.

Zusammenfassung

Hintergrund – In den letzten Jahren haben medizinische Tests direkt für den Konsumenten sowohl in der Human- wie auch in der Veterinärmedizin zugenommen. Bei Allergien gibt es einige Firmen, die betriebseigene Haar und Speicheltests an Haustierbesitzer vermarkten. Diese Tests sind nicht überprüft und es gibt wenig regulierende Kontrollen für derartige Tests in der Veterinärmedizin.

Hypothese/Ziele – Eine Untersuchung der Genauigkeit und Reproduzierbarkeit eines kommerziellen Haar- und Speichelallergentests direkt für den Konsumenten.

Tiere – Sieben gesunde Tiere (sechs Hunde, eine Katze); sechs Tiere (fünf Hunde, eine Katze) mit atopischer Dermatitis; 11 Proben aus synthetischem Fell und steriler Kochsalzlösung.

Methoden und Materialien – Doppelte Proben von Tierhaaren und Tierspeichel, und 11 Proben aus synthetischem Fell und Kochsalzlösung wurden gesammelt (insgesamt 35 Proben) und an eine Firma zur Analyse übermittelt, was 12.075 Ergebnisse zur statistischen Analyse brachte.

Ergebnisse – Es wurden für alle direkt vom Konsumenten übermittelten Proben, inklusive der synthetischen Fellproben und der Proben aus Kochsalzlösung positive Ergebnisse geliefert. Die Testergebnisse aus den Proben der gesunden und atopischen Tiere unterschieden sich nicht voneinander oder von den synthetischen Fellproben und Proben aus Kochsalzlösung. Die Reproduzierbarkeit der doppelten Proben unterschied sich nicht von einer zufallsbedingten Möglichkeit. Die Ergebnisse von echten Tieren korrelierten stark mit den Ergebnissen für die synthetischen Fellproben und die Proben mit Kochsalzlösung (r = 0,71; P < 0,05).

Schlussfolgerungen und klinische Bedeutung – Die Analyse der Haare und des Speichels dieser Studie, die direkt für den Konsumenten gedacht waren, erbrachte nicht mehr als ein Zufallsergebnis und die Ergebnisse waren nicht reproduzierbar.

要約

背景 – 人および獣医領域において、健康状態に対する消費者直結の医療検査利用可能率が近年増加している。アレルギーに関しては、いくつかの会社が独自の毛髪および唾液検査を直接ペットオーナーに販売している。これらの検査は検証されておらず、獣医学におけるこのような検査の規制監督には限度がある。

仮説/目的 – 本研究の目的は、市販の消費者直結毛髪および唾液アレルゲンテストの正確性および再現性を調査することである。

被験動物 – 7頭の健康な動物(犬6頭、猫1頭)。6頭のアトピー性皮膚炎の動物(犬5頭、猫1頭)。合成毛皮と滅菌食塩水11サンプル。

材料および方法 – 複製した動物の毛髪および唾液ならびに合成被毛および食塩水の11サンプルを収集し(計35サンプル)、解析のために会社に提出し、統計解析のために12,075の結果を得た。

結果 – 消費者直結ペットアレルギー陽性結果が、合成被毛や食塩水を含む提出された全てのサンプルにおいて得られた。健常およびアトピー性動物サンプルから得られた試験結果は、互いに、また合成毛皮および生理食塩水試料との差を生じなかった。対になったサンプルの再現性は、無作為な偶然と変わらなかった。実際の動物に対する結果は、合成被毛および食塩水サンプルに対する結果と強く相関していた(r = 0.71、P <0.05)。

結論と臨床的重要性 – 本研究で調査したペットアレルギーに対する消費者直結毛髪および唾液テストは偶然以上の成果を上げなかった。そして検査結果に再現性を認めなかった。

摘要

背景 — 近年来,针对人类和兽医健康状况的医学检测直销越来越多。对于过敏症,一些公司向宠物主人直销专有的毛发和唾液检测。这些检测尚未合法化,并且对兽医机构的此类测试监管有限。

假设/目标 — 验证商业直销的毛发和唾液过敏原检测的准确性和重复性。

动物 — 七只健康动物(六只犬,一只猫); 六只患有异位性皮炎动物(五只犬,一只猫); 11个合成皮毛和无菌盐水样品。

方法和材料 — 重复收集动物毛发和唾液、 11份合成毛和盐水样本(总样本35份),并提交给公司进行分析,得出12075份结果进行统计分析。

结果 — 所有直销提交的样本(包括合成皮毛和生理盐水),宠物过敏测检测结果提均为阳性。健康动物与异位性皮炎动物样品的检测结果没有差异,也没有区别于合成皮毛和盐水样品。配对样本的重复性与随机概率无显著差异,真实动物的结果与合成毛皮和盐水样品的结果密切相关($r = 0.71$, $P < 0.05$)。

结论和临床重要性 — 对于直销的宠物毛发和唾液过敏原检测,本研究验证不比偶然性检测好,并且结果不可重复。

Resumo

Contexto – A disponibilidade testes médicos direcionados ao consumidor final na área de saúde humana e veterinária tem crescido nos últimos anos. Para alergias, diversos fabricantes registraram testes com amostras de pelos e saliva para serem realizados diretamente pelos proprietários dos pets. Estes testes não foram ainda validados, e a supervisão regulatória dos mesmos na medicina veterinária é muito limitada.

Hipótese/objetivos – Avaliar a acurácia e a reprodutibilidade de um teste alérgico comercial direcionado ao consumidor final feito a partir de amostras de saliva e pelos.

Animais – Sete animais saudáveis (seis cães, um gato); seis animais (cinco cães, um gato) com dermatite atópica; 11 amostras de pelo sintético e salina estéril.

Métodos e materiais – Amostras de saliva e pelos dos animais em duplicata, e 11 amostras de pelo sintético e salina foram coletados (total de amostras: 35) e submetidos ao fabricante para análise, gerando 12.075 resultados para análise estatística.

Resultados – O fabricante do teste alérgico forneceu resultados positivos para todas as amostras submetidas, incluindo o pelo sintético e a salina. Os resultados para as amostras dos animais saudáveis e atópicos não apresentaram diferenças entre si ou quando comparados às amostras de pelo sintético e salina. A reprodutibilidade do teste para amostras pareadas não foi diferente da probabilidade ao acaso. Os resultados para os animais reais correlacionaram fortemente com os resultados das amostras de pelo sintético e salina ($r = 0{,}71$, $P < 0{,}05$).

Conclusões e importância clínica – O teste alérgico comercial direcionado ao consumidor final avaliado neste estudo não apresentou resultados melhores que o acaso, e os resultados não foram reprodutíveis.

