



IMPACT OF THE DIETARY PAST ON THE FORMATION OF FEEDING PREFERENCES

Speaker : Isabelle Guiller, SPF - DIANA Pet Food division, Elven - France
Researchers : Julien Roguès, Claire Forges and Céline Baron , SPF, Elven - FRANCE

BACKGROUND

The domestic cat, *Felis catus*, expresses different kinds of feeding behavior. Previous studies have shown that cat preferences for food can be inherited, and may be linked to the mother's feeding during gestation and lactation [1]. Over time, the food preferences of cats can evolve as the result of a balance between neophilia [2] and neophobia [3].

PANELIS, the expert center dedicated to palatability measurement and feeding behavior studies, performs versus palatability tests with over 380 cats on a daily basis. All the cats are fed different dry diets characterized by their kibble composition, the nature of palatability enhancers (PE)... This large amount of data was reviewed and analyzed in order to assess the possible effect of food imprinting in cats.

METHODOLOGY

To conduct the study, palatability testing data was reorganized to trace back the exact feeding experience of each cat. A total of 350 000 individual data was collected from all meals given during the versus palatability tests performed by 385 cats from 2007 to 2010.

In a first step, the formulation and manufacturing process of all cat PE were recorded and divided in seven criteria to characterize them. In a second stage, the number of times each cat was in contact with a given feature of palatability enhancer was calculated (Table 1). Finally, to characterize preference, a score of 1 was assigned to the most eaten product and a score of 0 to the other product (Table 2).

The degree of exposure was then statistically processed using two forms of multivariate data analysis: PCA (principal components analysis) and HCPC (hierarchical clustering on principal components). Additionally, a logistic model with random effects was developed to measure the link between the level of exposure to a food feature and the preference of cats for foods exhibiting this feature. This model was adjusted for each food feature.

Table 1. Level of exposure of each criterion per cat
exp = exposure to a criterion

Animal name	Cattery	exp_total	exp_crit1	exp_crit2	exp_crit3	...
CAT 1	GROUP 7 CT	1295	229	314	644	...
CAT 2	GROUP 7 CT	1070	204	224	565	...
...

Table 2. PREFERENCE OF PALATABILITY ENHANCER BY LEVEL OF EXPOSURE

Date of test	Animal name	PE name	Level of criterion BioR	Exposure class (BioR 0)	Exposure class (BioR 1)	Exposure class (BioR 2)	Preference
11/07/2008	ZAK	3% Liquid PE 1	1	[0-10]	[0-10]	[0-10]	0
11/07/2008	ZAK	2% powder PE 1	2	[0-10]	[0-10]	[0-10]	1
...
12/10/2008	ZAK	2% powder PE 2	0	[11-20]	[51-100]	[11-20]	1
12/10/2008	ZAK	2% powder PE 3	2	[11-20]	[51-100]	[11-20]	0





IMPACT OF THE DIETARY PAST ON THE FORMATION OF FEEDING PREFERENCES

Speaker : Isabelle Guillier, SPF - DIANA Pet Food division, Elven - France
Researchers : Julien Roguès, Claire Forges and Céline Baron , SPF, Elven - FRANCE

KEY POINTS

The first set of analysis establishes that cats can be grouped in classes, based on their feeding history. Figure 1 highlights the contrast between cats with a high or low level of exposure to all the features of the PE. This distribution is mainly the result of the amount of data available per cat, i.e. the number of palatability tests undergone by each cat at PANELIS.

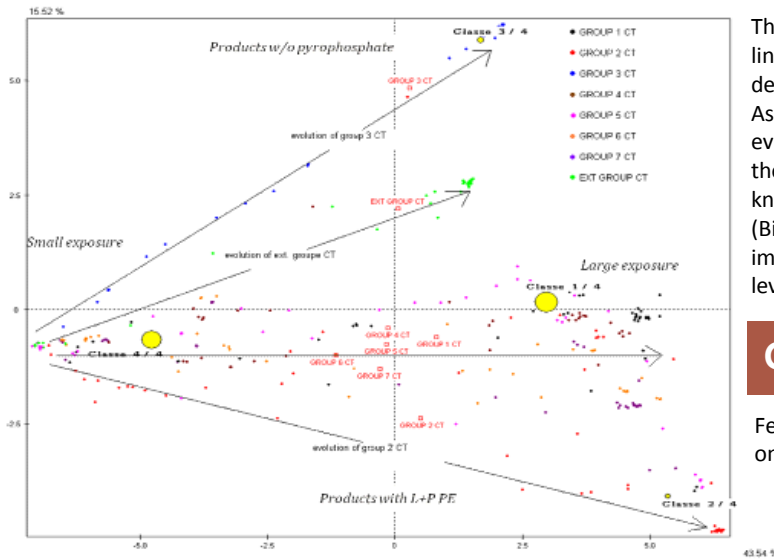


Figure 1. PCA PLOT OF EXPOSITION LEVEL FOR CATS AND CATTERIES

Cats were grouped into 4 classes of exposure (yellow circle).

Two of these classes are strongly linked to the panels (class 2=group 2 & class 3=group 3).

The second level of analysis suggests a link between the feeding history and the development of individual preferences. As an example, figure 2 highlights the evolution of preferences in relation to the level of exposure for the feature known as “biochemical reaction level 2” (BioR 2). The preference for BioR 2 is impacted positively by an increased level of exposure.

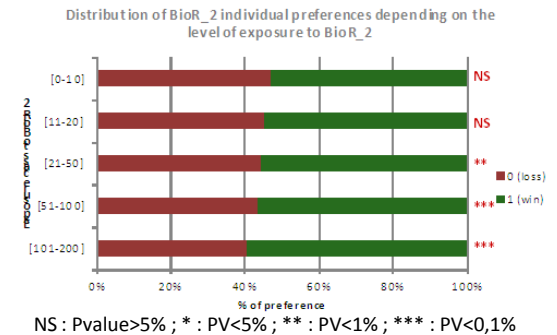


Figure 2. RESULTS FOR THE BIOCHEMICAL REACTION 2
Preference to food presenting the BioR2 feature increases through repeated exposure.

GENERAL CONCLUSION

Feeding preferences change over time and are influenced by a lifetime of feeding experiences. Depending on the product features that were studied, the effect of the dietary past of a cat can be one of the following:

- => The preference for a product is strengthened through repeated consumption
- => The dislike for a product is developed through repeated consumption
- => The preference for a product is acquired right from the first consumption and remains stable through repeated consumption

Therefore, the study demonstrates the importance of recording and controlling the feeding experience of cats involved in palatability studies. To overcome possible bias due to past feeding history, PANELIS has developed a strong expertise in animal feeding behavior, cattery management and data analysis.

REFERENCES

- [1] Becques, A. (2009). Effects of Pre- and Postnatal Olfactogustatory Experience on Early Preferences at Birth and Dietary Selection at Weaning in Kittens. Chemical Senses, Vol 35, 41-45
- [2] Bradshaw, J. W. S. et al (2006). The Evolutionary Basis for the Feeding Behavior of Domestic Dogs (Canis familiaris) and Cats (Felis catus). The Journal of Nutrition, 19275-19315
- [3] Thome, C. J. (1982). Feeding behaviour in the cat – recent advances. Journal of Small Animal Practice, 23, 555-562.

