Cat food palatability

Enhancing taste and nutrition with yeast

ARBIOM

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Introduction

Palatability significantly influences cats' food preferences; feed them well and with taste! The domestic cat, a beloved member of many households, holds a prominent place in our lives. Approximately 35% of American households own at least one cat, forming a vital segment of the pet market (Pallotto M.R. et al., 2018). With Europe and the USA housing a staggering 110 million and 60 million cats respectively (FEDIAF, 2022; Petfood Forum, 2022), the role of cat food in the pet industry is undeniably substantial.

The significance of nutrition in our pets' lives cannot be overstated. Palatability, which encompasses elements like taste and aroma, plays a pivotal role in pets' mealtime experience. Within the pet food industry, rigorous efforts are continually being made to ensure optimal nutrition, feeding behavior, and overall well-being. This evolution is marked by groundbreaking research, innovative ingredients, diverse flavors, and enhanced processing techniques. These advancements are tailored to meet the dynamic preferences of pet owners and their cherished companions, providing sustainable and palatable solutions.

Intrinsic to the landscape of pet food, palatability transcends mere taste. This multifaceted factor directly shapes pets' nutritional intake, eating behaviors, and overall health. Selecting pet foods that are both highly palatable and nutritionally fortified empowers cat owners to provide their feline friends with meals that are not only nourishing but also a source of enjoyment. For pet food manufacturers, emphasizing palatability ensures products that align with pet owners' expectations while promoting optimal health for our beloved companions. Through a shared understanding of the importance of palatability, the profound bond between humans and pets is further fortified, fostering longer and healthier lives.

02.
The intricacies of cat food palatability

Undoubtedly, palatability takes center stage in the realm of feline dining. This crucial facet warrants undivided attention; it holds the power to influence cats' appetites and satisfaction (Barnett J., 2020). Cats, well-known for their selective eating tendencies, are particularly attuned to the palatability of their food. Ensuring the palatability of cat food extends beyond mere gustatory satisfaction—it actively contributes to their overall health and well-being. It is imperative to acknowledge that cats' discerning nature may lead them to reject food that doesn't resonate with their preferences, even if it is nutritionally complete (Pekel A.Y. et al., 2020).

Unveiling the dynamics of palatability in cat food reveals a symphony of factors at play. Central among these is the taste itself. Cats exhibit distinctive taste preferences, demonstrating a pronounced inclination toward meat-like flavors. Premium cat foods often leverage real meat or fish as their primary ingredients, providing a protein-rich diet that mirrors cats' natural dietary inclinations. The texture of food also figures prominently in palatability. Cats gravitate towards food that strikes the right balance of moisture, consistency, and bite-sized portions. Such textural attributes facilitate easy chewing and digestion, adding to the overall appeal of the meal.

The olfactory dimension, marked by cats' keen sense of smell, holds equal sway. A captivating aroma serves as a compelling invitation to dine, drawing cats to their meals (Hullar I. et al., 2001). Fresh, natural scents elevate cats' willingness to partake in their food, underscoring the role of sensory experience in palatability. The significance of palatability extends beyond mere gustatory delight; it directly influences cats' nutritional intake. When food is palatable, cats are more inclined to consume essential nutrients vital for their growth, energy, and holistic health. This is especially pivotal for finicky eaters and cats with specific dietary requirements. Additionally, the positive correlation between palatability and feeding ease averts disruptions during mealtime. Cats that find their food delectable are less likely to engage in picky eating behaviors, translating to peace of mind for their owners.

03.
Unraveling the complexities of cats’ finicky eathing

Cats' reputation for finicky eating habits is well-earned, as they often display a measured approach to meals. Rather than consuming their entire meal in one sitting, they opt for a multi-step process that includes smelling and tasting. This deliberate approach allows olfactory neurons ample time to assess the scent and decide on their liking for the food. This behavior is an interplay of numerous factors—ranging from biological needs to instinctive preferences, even down to individual personalities.

Comparatively speaking, cats possess more scent receptors than dogs, with recent studies suggesting a heightened ability to discern various smells. This sensory prowess is attributed to their receptors and the vomeronasal organ, also known as Jacobson's organ. Biologically, cats boast a sophisticated sense of taste and smell, making them acutely attuned to subtleties in their food. Their exceptionally low taste threshold enables them to detect even the slightest deviations in taste and texture. This heightened sensitivity often translates to selective eating habits, where cats may opt for specific foods that resonate with their preferences (Alegria-Moran R.A., 2019).

While cats' tally of approximately 470 taste buds pales in comparison to humans and dogs (with 9,000 and 1,600 respectively), their taste preferences are highly specific. The presence of seven receptors dedicated to taste sharpens their sensitivity to bitterness, even though they tend to reject bitter food. Interestingly, cats are insensitive to sweetness, leaving this taste undetected. The cat's palate favors umami and fat, reflecting their carnivorous nature. This preference aligns with their evolutionary history—detecting bitterness in plants, a common indicator of toxicity, serves to protect them. In contrast, umami, a hallmark of amino acids, beckons them toward protein-rich sources (Briand L. et al., 2017).

04.
Understanding the Nuances of Satisfying Cats' Preferences

Satiation of cats' eating habits pivots on a fundamental premise: the flavor profile of their food. Fostering optimal health and well-being hinges on the alignment of a cat's diet with its biological requirements. Cats are obligate carnivores, necessitating a diet rich in animal protein for vitality. This entails offering cat food that echoes the composition of their natural prey, featuring high-quality meat or fish sources. The integration of a protein-rich diet, tailored to their biological demands, satiates their penchant for meat flavors. This approach not only nurtures growth, muscle development, and energy but also bolsters digestive health.

The strong correlation between protein levels and palatability in cat food is undeniable (Pekel A.Y., et al., 2020). Elevating the protein content of kibble invariably results in heightened consumption (De Ratuld A., 2019). Delving deeper into the protein discourse, the origin of these proteins assumes significance against the backdrop of nutrition and sustainability challenges. Generally, animal proteins hold the upper hand over plant-based counterparts like soybean or wheat gluten.

However, the landscape is not rigid, with emerging plant proteins like pea proteins and single-cell proteins vying for palatability supremacy. Against the backdrop of the environmental impact posed by conventional protein sources, the exploration of protein-rich, sustainable, and highly palatable alternatives finds resonance within the industry. Moreover, the exclusion of artificial additives or preservatives serves to enhance the quality and taste of feline fare (Craig M., 2021).

In essence, the path to satisfying cats' preferences mandates thoughtful consideration. The quality of protein emerges as a crucial determinant, as the nutritive value of proteins is variable. Amino acids, the building blocks of proteins, hold pivotal roles in protein synthesis. Out of the 22 amino acids, cats require 11 essential amino acids that cannot be synthesized internally and must be ingested. The presence of specific amino acids also wields influence over palatability. Notably, cats gravitate towards lysine, histidine, proline, cysteine, ornithine, and leucine while recoiling from arginine, isoleucine, phenylalanine, and tryptophan (Pekel A.Y. et al., 2020).

05.
Elevating palatability with yeast, specifically Torula yeast

At the crossroads of cat food, palatability lies a prominent contributor—yeast. Employed extensively in the quest to enhance palatability, yeast emerges as a natural source of aromatic compounds that accentuate the taste profiles of pet and cat foods alike. The multifaceted benefits of yeast have positioned it as an invaluable asset in enhancing cat food palatability within the pet industry. Underpinning its appeal is the treasure trove of natural amino acids, nucleotides, and other compounds that enrich the savory, umami taste cats instinctively crave.

The panorama of yeast species is vast and largely untapped, offering a kaleidoscope of natural compounds and varying protein content (Boekhout T. et al., 2022). Among this diverse spectrum, Torula yeast, though having garnered limited attention thus far, stands out. This yeast variant boasts a robust and distinct flavor profile that resonates naturally with cats. Processed forms of yeast, including yeast extracts and hydrolyzed yeast, have found their place in the pet food industry, bolstering palatability. Notably, Arbiom has pioneered an innovative ingredient, SylPro®, derived from Torula yeast. This remarkable ingredient not only elevates palatability but also boasts a high protein content.

SylPro® emerges as a game-changer, holding transformative potential for enhancing cat food palatability. Offering an alternative to both meat and plant-based proteins, Torula yeast presents a compelling solution for meat-free diets that meet cats' nutritional needs and taste preferences. A recent study conducted by Kansas State University demonstrated cats' preference for SylPro-based kibbles over traditional chicken meal or pea protein (Holt D.A., Aldrich C.G., 2022). This preference wasn't fleeting—it endured as a lasting choice, reinforcing SylPro's appeal.

SYLPRO

Table 1: Preference of adult cats for Torula yeast, chicken meal, and pea protein using a split-plate trial design.

Diet comparison (A vs. B)	First Choice, n[1]	Diet A:B[2]
SylPro vs. Chicken meal	36*	6.26*
SylPro vs. Pea protein	25	2.33*

[1]*First Choice (FC): number of first choices for Diet A (40 observations)*
[2]*Intake Diet A: 20% protein / Diet B: 20% protein*
**Comparisons differ (P<0.05)*

Further studies underscore Torula yeast's prowess in surpassing competing options. In a comparison with autolyzed yeasts in cat treats (coated micro sticks), Torula yeast emerged as the victor, solidifying its position as a palatability powerhouse. A subsequent study replicated this success, incorporating Torula yeast in a meat-based snack formula. Once again, the yeast-based snacks outshone their traditional counterparts.

Table 2: Comparison of the greatest degree of consumption of treats prepared with Torula yeast or autolyzed yeast in adult cats (n=30) and meat-based treats prepared with or without torula yeast in adult cats (n=30).

	Autolysed yeast-based treat		Meat-based treat	
Palatability of cat snacks	*Number*	*%*	*Number*	*%*
Preferred: Alternative treat	12	40	12	40
Preferred: SylPro	**18**	**60**	**17**	**57**
Eat same amount for both product	0	0	0	0
Nothing eaten	0	0	1	3
Total	**30**	**100**	**30**	**100**

For those seeking to elevate their feline's dining experience, Torula yeast emerges as an impeccable solution. It enriches food formulations with natural flavor-enhancing properties that resonate with cats' palates. SylPro®, Arbiom's premium protein ingredient, not only enriches the palatability but also encapsulates a wealth of essential amino acids. Its role extends beyond palatability—it demonstrates exceptional functionality during food processing, an attribute sometimes associated more closely with plant proteins than animal proteins. This positioning is reinforced by Torula yeast's safety for feline consumption, reaffirming its suitability for incorporation (Holt D.A., Aldrich C.G., 2022).

Concluding thoughts on cat food palatability and yeast's role

In the grand tapestry of cat food, palatability emerges as an undeniable linchpin. By embracing the principles of palatability, cat owners ensure their feline companions partake in meals that are not only nutritionally robust but also an embodiment of gustatory delight. Taste, texture, and aroma intertwine to orchestrate a symphony of satisfaction, underscoring the importance of cat food manufacturers aligning their products with feline preferences. In this pursuit, yeast, particularly Torula yeast, emerges as a formidable ally.

The journey towards palatability is not merely an indulgence—it's a testament to our commitment to our pets' well-being. The inclusion of Torula yeast amplifies this commitment, infusing meals with a natural allure that beckons cats to dine with enthusiasm. SylPro®'s multifaceted contributions span palatability, high protein content, and sustainable sourcing. In an era where the nexus between sustainability and nourishment is paramount, Torula yeast's role assumes a heightened significance.

Ultimately, enhancing cat food palatability transcends the realm of culinary preference—it speaks to our connection with our feline friends. The meals we provide are an embodiment of care, fostering vitality, and fostering a bond that enriches both our lives and the lives of our cherished companions. So, if you're ready to elevate your cat's dining experience, consider the transformative power of Torula yeast. With SylPro® leading the way, you're not just embracing palatability—you're investing in a legacy of health, joy, and shared moments.

References

Pallotto M.R., de Godoy M.R.C., Holsher H.D., Buff P.R., Swanson K.S., 2018. Effects of weight loss with a moderate-protein, high-fiber diet on body composition, voluntary physical activity, and fecal microbiota of obese cats. Am J Vet Res. 79:181–190. DOI:10.2460/ajvr.79.2.181

Petfood Forum US, 2022. Oral presentation from Packaged Facts

FEDIAF European Petfood, 2022. Annual Report

Barnett J., 2020. Understanding the science behind pet food palatability, AFB International

Pekel A.Y., Mülazımoğlu S.B., Acar N., 2020. Taste preferences and diet palatability in cats, Journal of Applied Animal Research, 48:1, 281-292, DOI: 10.1080/09712119.2020.1786391

Hullar I., Fekete S., Andrasofszky E., Sz˜ocs Z., Berkenyi T., 2001. Factors influencing the food preference of cats. J Anim Physiol Anim Nutr. 85:205–211. DOI:10.1046/j.14390396.2001.00333.x.

Alegría-Morán R.A., Guzmán-Pino S.A., Egaña J.I., Sotomayor V., Figueroa J., 2019. Food preferences in cats: Effect of dietary composition and intrinsic variables on diet selection animals (basel). Vol 9(6): 372. doi: 10.3390/ani9060372

Briand L., van Overstraeten C., 2017. Le goût des animaux : enjeu d'appétence en petfood. 2017.hal-02918746

De Ratuld A., 2019. Cat food: How to make the most palatable kibbles

Craig M., 2021. Additives in pet food: are they safe? Journal of Small Animal Practice 62(8). DOI:10.1111/jsap.13375

Boekhout T., Amend A.S., El Baidouri F., Gabaldón T., Geml J., Mittelbach M., Robert V., Tan C.S., Turchetti B., Vu D., Wang Q-M. & Yurkov A., 2022. Trends in yeast diversity discovery. Fungal Diversity volume 114, pages 491–537 (2022)

Holt D.A., Aldrich C.G., 2022. Evaluation of Torula yeast as a protein source in extruded feline diets. Journal of Animal Science, Volume 100, Issue 12, December 2022. https://doi.org/10.1093/jas/skac327

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About Arbiom

Arbiom is committed to feeding the world in a sustainable and healthy way. Driven by our values of Excellence, Inclusivity and Sustainability, our passionate team leverages the power of fermentation to create the next generation protein ingredients by tapping into nature-based solutions.

Arbiom truly adds to the food supply by creating rather than redistributing proteins. Our products are purpose-grown, protein-rich and natural. With excellent functional and sensory properties, they are a perfect solution to healthy human and animal nutrition.

Arbiom's first industrial project is underway in France, providing a safe and secure supply of 10.000 tons of product per year to customers and partners.

ARBIOM
Excellence in Protein

About SylPro®

SylPro® is Arbiom's protein-rich ingredients for feed. It represents the next generation of food ingredients, offering science-backed nutritional, and sustainability benefits for a range of feed applications.

SylPro® offers key benefits as a protein source for animal health:

- High protein content and balanced amino acid content
- Class-leading digestibility and bioavailability
- Sustainability benefits with low carbon footprint and clean-label compliance
- Purpose grown and consistent product

Arbiom has demonstrated SylPro® delivers superior nutritional performance in several in vivo feed trials. SylPro® can be used as a protein ingredient for petfood, aquaculture and weanling pig diets.

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