DRY VS. LIQUID PALATANTS IN DRY CAT FOOD: WHAT DRIVES FELINE PREFERENCE

SCIENCE & TECHNOLOGY, AFB INTERNATIONAL

OVERVIEW

Selecting the right palatant strategy is a key driver of dry cat food performance. While liquid palatants are widely used in pet food, dry palatants often deliver superior results in cats. This white paper explores the sensory and technological factors behind this difference and evaluates whether combining dry and liquid palatants can provide an effective alternative.

DIFFERENT SENSORY DRIVERS IN CATS AND DOGS

Cats and dogs perceive and evaluate food differently, with important implications for palatant design.

Dogs rely predominantly on olfaction when selecting food. This is reflected in two-bowl preference tests, where first choice and intake ratio are strongly correlated ($R^2 \approx 0.9$). In other words, the food selected first is generally consumed in greater proportion, highlighting the importance of aroma in canine feeding behavior.

In cats, this relationship is weaker (typically $R^2 < 0.7$), suggesting a greater contribution of post-ingestive sensory perception, including taste. Cats also typically consume kibbles individually, allowing more thorough evaluation of each piece.

Texture and moisture further influence feline acceptance. Dry cat food is typically produced at a final moisture content of 4-6%, supporting the dry texture cats are adapted to.

DRY VS. LIQUID PALATANTS IN CATS

Because taste plays an important role in feline food acceptance, dry palatants can be particularly effective in dry cat food. Applied to the kibble surface, they dissolve in saliva during mastication, promoting direct delivery of palatant compounds to taste receptors.

Liquid palatants can contribute strongly to aroma perception. They also increase final kibble moisture, negatively affecting texture and palatability if drying conditions are not adjusted. Dry palatants typically have a moisture content closer to that of the kibble and have almost no impact on final moisture.

To investigate the impact of palatant format, two-bowl tests were conducted with 30 cats over two consecutive days. In the first series, a super-premium (SP) liquid cat palatability enhancer (LCPE), applied topically at 2.0%, was compared with a SP dry cat palatability enhancer (DCPE) applied at 1.0% or 1.5%. DCPE significantly outperformed LCPE at both application levels ($p < 0.001$; **Figure 1**).

However, the comparison was biased by moisture: 2.0% LCPE increased kibble moisture by approximately 1.3 percentage points, whereas DCPE had little impact. Because higher moisture reduces cat palatability, the comparison was repeated under moisture-matched conditions.

As shown in **Figure 2**, the palatability gap was substantially reduced. At 1.0% DCPE, there was no longer a significant difference versus 2.0% LCPE. At 1.5% DCPE, DCPE remained significantly better, although the gap decreased from 60 to 34 percentage points and significance decreased from $p < 0.001$ to $p < 0.01$.

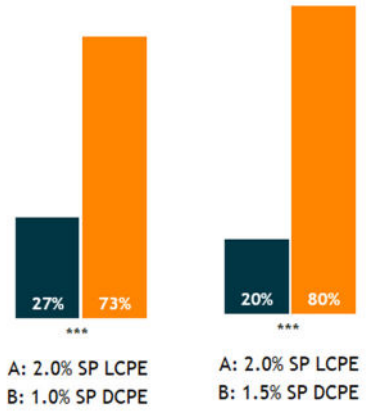


Figure 1. *Cat palatability comparison between 2.0% SP LCPE and SP DCPE applied at 1.0% or 1.5%. DCPE significantly outperformed LCPE at both application levels.*

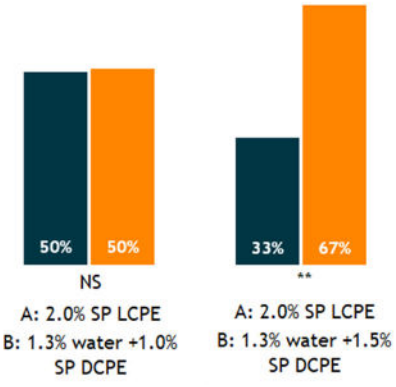


Figure 2. *Cat palatability comparison between 2.0% SP LCPE and SP DCPE at 1.0% or 1.5% under moisture-matched conditions.*

[1] *Significance: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; NS, $p > 0.05$.*

The effect is palatant-dependent. Under the same moisture-matched conditions, standard (std) DCPE still significantly outperformed std LCPE, even at 1.0% DCPE (**Figure 3**).

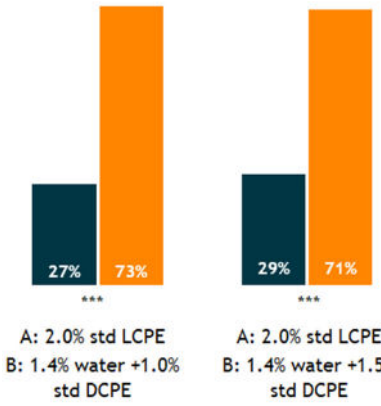


Figure 3.
Cat palatability comparison between 2.0% std LCPE and std DCPE at 1.0% or 1.5% under moisture-matched conditions.

COMBING DRY AND LIQUID PALATANTS

DCPE can outperform LCPE at lower application levels. Can combining both formats provide an additional advantage?

To investigate this, 2.0% SP LCPE + 1.5% SP DCPE was compared with 2.1% SP DCPE alone. Application levels were selected to provide equivalent cost-in-use, and moisture was matched between treatments.

As shown in **Figure 4**, both treatments achieved similar palatability. Thus, at equivalent cost-in-use, combining liquid and dry palatants can maintain performance while providing greater flexibility.

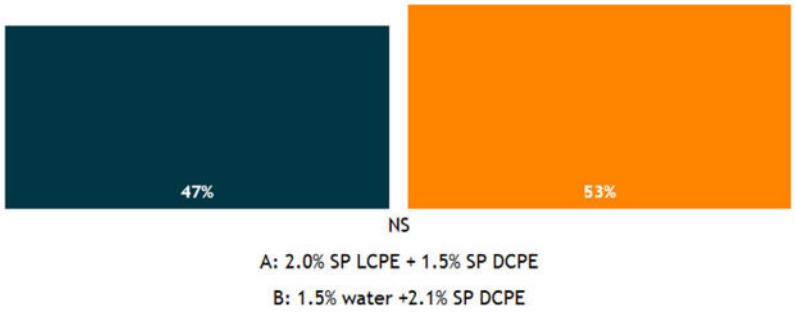


Figure 4.
Cat palatability comparison between 2.0% SP LCPE + 1.5% SP DCPE and 2.1% SP DCPE alone at equivalent cost-in-use and matched moisture conditions.

This combination can be particularly useful when:

- the practical inclusion limit of DCPE has been reached (generally around 3%, above which powder adhesion can become problematic);
- low-fat coating conditions limit DCPE adhesion;
- additional liquid palatant is needed to overcome coating constraints while maintaining or increasing performance.

CONCLUSION

Cats and dogs respond to different sensory drivers when selecting and consuming food. Taste and post-ingestive evaluation appear to play a greater role in cats, helping explain why dry palatants can outperform liquid-only solutions in dry cat food.

However, performance depends on the palatant, kibble and coating conditions. Palatant strategies should therefore be validated under customer-specific conditions whenever possible.

Liquid palatants are valuable when formulation or coating constraints limit further dry palatant application. Depending on the palatant and conditions, liquid palatants alone can sometimes match dry palatants, while combining dry and liquid formats can maintain or enhance palatability, with the potential for cost-neutral performance.

Moisture should always be controlled when comparing palatant formats. Both pilot and commercial conditions should be adjusted to maintain the target final moisture and avoid moisture-related bias in palatability testing.