**Introduction**

Unique flavor profiles continue to emerge as US consumers increasingly look for eating experiences that deliver authentic tastes reflective of traditional ethnic cuisines and culinary techniques.

**Challenges with Chili Peppers**

- Strong overall intensity
- Presence of heat and other feeling factors
- Non-volatile components/taste complexity

As the result of a unique decoupling approach to this challenging flavor profile and modifications to the tasting protocol, Givaudan developed a comprehensive sensorial map of over 80 market products and 16 fresh chili pepper varietals. Insights from the map led to the creation of differentiating flavor profiles relevant to consumers.

**Decoupled Language Development & Evaluation Approach**

**Orthonasal Language Development**

- MiniVAS™ (Virtual Aroma Synthesizer) (Figure 1)
- 11 descriptive panelists
- 10 chili pepper varietals
- Panelists experience the head-space of peppers and characterize perceptions through smell
- Panelists use free description, Givaudan’s SenseIt™ language, and expanded descriptors

**Foundational Language & Descriptive Profiling**

- Over 20 descriptors describe the sensory perception of aroma, taste, and flavor characteristics of chili pepper varietals
- This serves as foundation for chili pepper-flavored product evaluations
- Only 3 references are non-SenseIt™ adaptations based on regional influence
- Descriptive analysis conducted of top-selling & iconic chili pepper-flavored market products using trained external panel
- Quantitative Flavor Profiling (QFP) methodology
- Additional attributes were added to the language as appropriate for market products

**Retronasal Language Development**

- Descriptive eating experience
- 11 descriptive panelists
- Samples were pre-screened by project team to narrow down to 3 differentiating chili pepper profiles for language development
- Panelists used terms from MiniVAS™ session and added taste, mouthfeel, and other flavor attributes

**Results & Insights**

**Deeper Understanding of Chili Pepper Profiles**

- There is value in the decoupling approach:
  - Better differentiation of aromatics that most commonly are lost due to the heat intensity
  - Expanded sensory language
  - Unique panel training tool utilizing the MiniVAS™
  - Actionable information to support flavor development of chili pepper flavors with authentic aromatics
  - Applied learning to chili pepper-flavored market products (Figure 2)

**Chili Pepper Flavor Opportunities**

- Understanding of potential flavor gaps from the market led to the creation of differentiating chili pepper flavors
- Select flavors were optimized in application and submitted for descriptive analysis and consumer testing