



Including Oncology Patients in the Product Development Process for Nutrition Drinks May Improve Compliance

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Introduction

Chemo- and radiation therapy can lead to taste alterations and oral mucositis, severely affecting food intake and nutritional status^{1,2}. An innovative line of clear nutrition drinks was developed for and in collaboration with cancer patients. These products offered a sensory experience based on the patients' preference for a clear, non-milky and light drink versus traditional thick and heavy nutrition shakes. Recipes for these drinks were further refined based on patient feedback to include natural flavors and reduce sugar.

Objective

To leverage patient feedback to guide the formulation of oncology-specific nutritional drinks, with the goal of enhancing user experience leading to improved compliance.

Approaches

Trained Sensory Taste Panel

Study 1



- N=11 descriptive analysis panelists
- Evaluated 2 product flavors (Lemon and Strawberry)
- Evaluated 2 products (current vs trial).
- Evaluated appearance, odor, flavor and texture
- 27 attributes
- Monadic sequential evaluation.

Study 2



Home Use Test (HUT)

- N=84 pre-recruited across 2 French Cities.
- Undergoing or have gone through treatment in ≤ 8M.
- 1 bottle evaluated per day (2 flavors of optimized formulations)
- Served refrigerated

Demographics for Patients in HUT Study 2 (n=84)	
Demographics	Percent (%)
Gender:	
Male	25
Female	75
Age:	
18 - 39	13
40 - 59	40
60 +	47
Treatment Status:	
Currently in treatment	64
Last treatment ≤ 8 months	36
Treatment Type:	
Chemotherapy	59
Radiation Therapy	15
Immunotherapy	41
Hormonal Therapy	15

Results Study 1

Attributes	Trained Sensory Panel Mean Ratings (10pt scale)			
	Lemon		Strawberry	
	Current	Trial	Current	Trial
Thickness	2.5 B	3.6 A	2.7 A	3.4 A
Sweetness	5.1 A	4.3 B	4.1 A	4.3 A
Fruity Flavor	4.3 B	5.1 A	5.3 A	4.4 B
Bitterness	1.6 A	1.7 A	2.2 A	0.5 B
Cooling	2.6 B	3.1 A	2.6 A	2.5 A
Astringent	5.3 A	4.5 B	5.7 A	3.9 A

Different letters within a given row indicate significant differences alpha ≤ 0.10.

Evaluation from the sensory panel led to additional optimization to reduce thickness and enhance flavor delivery of the clear nutritional beverages.

1. Spetten et al., 2017 Subjective and objective taste and smell changes in cancer. Annals of Oncology 28:969-984
2. Brisbois et al. Characterization of Chemosensory Alterations in Advanced Cancer Reveals Specific Chemosensory Phenotype Impacting Dietary Intake and Quality of Life. Journal of Pain and Symptom Management Volume 41, Issue 4, April 2011, 679-683

Results Study 2

Agreement to Taste Statements as Evaluated by Patients

Sensory Statements	% Panelists in agreement (moderately or strongly) agree with statement	
	Lemon	Strawberry
1=Strongly Disagree to 5 = Strongly Agree		
Has a taste that I like	69	88
Is a product for someone like me	61	86
Is easy to drink	70	85
Is not too sweet	83	82
Is a product I like	58	81
Is refreshing	68	81
Is soothing	64	79
Has no metallic after taste	76	73
Is a product I can drink everyday	56	67

Lemon & Strawberry beverages met expectations that the new recipes delivered on having “a taste that I like,” “is for someone like me,” “is not too sweet,” “is refreshing” and “is soothing.”

Summary

Formulating products using patient feedback successfully provided the specific sensory qualities that cancer patients undergoing chemo- and radiation therapy desire. Having a patient preferred sensory profile can ultimately help improve patient compliance & outcomes.