

Stability of Empyreal[®] 75

OBJECTIVE: Evaluate the effect of time, temperature and relative humidity on the stability of Empyreal[®] 75 over 18 months

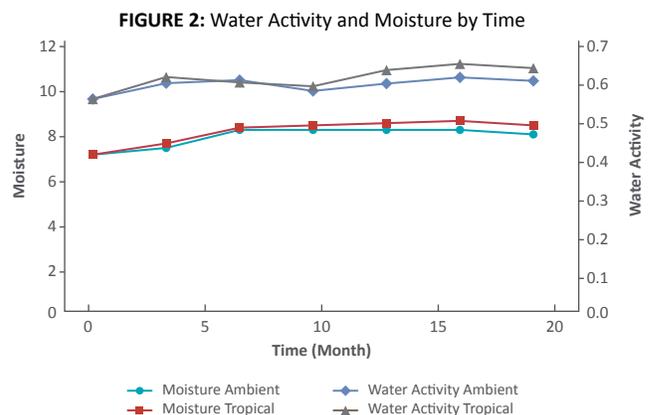
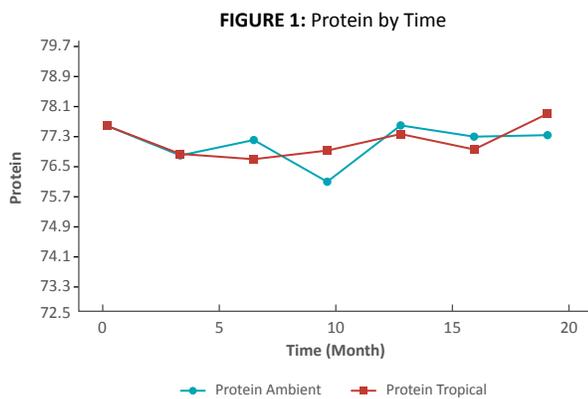
METHODOLOGY: A sample of Empyreal[®] 75 was split and placed into two 18-liter containers. Container 1 was stored under ambient conditions (25° C and 60% relative humidity) and container 2 was stored under tropical conditions (30° C and 75% relative humidity) for a period of 18 months. Conditions reflect the shipping conditions the product may encounter during transportation. Every three months, a sample from each container was analyzed for visual appearance, protein, peroxide value, moisture, water activity, yeast, mold and ammoniacal nitrogen (Table 1). Stability study protocol was completed by Eurofins Scientific Inc. Nutrition Analysis Center (Des Moines, Iowa USA).

RESULTS:

- Visual appearance of product was not impacted by time, temperature or relative humidity.
- Protein remained stable for 18 months. (Figure 1)
- Mold and yeast cfu/gram did not increase above baseline analysis.
- Moisture results for 18-month ambient conditions increased 0.9 % from baseline and 18-month tropical conditions increased 1.3% from baseline. (Figure 2)
- No spoilage was observed, as peroxide values remained low for the duration of the study.

TABLE 1. Analytical results

Analyte	Method Reference	Reporting Units	Baseline Value	18 Month Ambient	18 Month Tropical
Visual Appearance	Visual Description	No Unit	golden yellow powder with some small dark golden yellow granules and slightly larger light golden yellow granules	No Change	No Change
Protein - Combustion	AOAC 992.15; AOAC 990.03	%	77.59	77.34	77.91
Peroxide Value with Extraction	AOCS Cd 8-53	meq/kg fat	<2.0	3.5	3.7
Moisture by Vacuum Oven	AOAC 925.09	%	7.2	8.1	8.5
Water Activity	AOCS Cd 18-90	A _w	0.56	0.61	0.64
Mold	BAM Chapter 18	cfu/g	20	<10	<10
Yeast	BAM Chapter 18	cfu/g	10	<10	<10
Ammoniacal Nitrogen	AOAC 941.04	%	<0.2	<0.2	<0.2



CONCLUSION: The stability of Empyreal[®] 75 was not impacted by the time, temperature and relative humidity study conditions. Empyreal[®] 75 is stable for 18 months.

For more information regarding EMPYREAL[®], please call (402) 533-4282.

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