



Esbilac® 2024 test results

WildAgain recently had [lab tests](#) run on two samples of Esbilac® manufactured in 2024 as part of WildAgain's routine powdered milk replacer testing program. The tests were also in response to some performance issues being reported in early 2025 to see if the lab values might indicate some significant change in product formulation. The good news is it appears the product formulation has not changed in the last two years since the introduction of the [newly formulated Esbilac® in 2022](#). The lab test data presented below, comparing lots manufactured in 2024 and 2022, offers few clues to performance issues with wildlife in rehabilitation. As a result, it seems appropriate to identify and explore other factors that could cause GI disturbances and performance issues.



Summary

The following list highlights some of the key findings prior to a more detailed presentation of test results and analysis.

- ✓ **Ingredients.** Most listed ingredients are the same, though likely in very slightly different concentrations or amounts. It appears that some minor changes were made in the added carbohydrates.
- ✓ **Proximate analysis.** Very small differences with moisture and protein within guaranteed limits. Fiber remains elevated likely due to the added probiotics.
- ✓ **Ash.** Slight increases in concentrations noted in all dietary minerals except for a slight decrease in Manganese.
- ✓ **Fatty Acids.** Essential the same profile year to year with any differences within standard measurement error.
- ✓ **Rancidity.** The 2024 samples of Esbilac® continue to demonstrate acceptable shelf-stability with the both samples testing at a 'Non-detectible' level, indicating an absence of detectible rancidity and well within established guidelines for edible oils. Proper storage is still critical.

✓ **Physical characteristics.** Powder is still loose, fluffy and sticky. Measuring powder by volume or parts rather than weighing continues to cause error rates of + / - 7 to 13% from the calculated average weight. The average weight of the powder is about 10% higher than noted in the 2022 samples.

✓ **Reconstitution** [The reconstitution tests were deemed unwarranted and not performed due to the very small changes noted in the lab data year to year. It would be expected that the reconstitution properties have not changed in any significant manner.]

Ingredients (as listed on the package label)

The table at right lists a side-by-side comparison of the ingredients of the 2024 lots and 2022 formulations. The notable 2024 change in the **Primary Ingredients** listing is the substitution of maltodextrins for dried corn syrup. All other ingredients are generally listed in the same order of prominence though concentrations or amounts may have changed.

The list of **Secondary Ingredients** shows many small-quantity additives and supplements have changed in their presence/absence and likely concentrations. Dextrose has been added.

The fermentation products presumably intended for probiotic benefits have not changed. They are listed in a different order of prominence, suggesting actual concentrations may have changed since 2022.

2024 Formulation	2022 Formulation	2024 Formulation	2022 Formulation
Primary Ingredients			
Vegetable oil	Vegetable oil		
Casein	Casein		
Dried whey protein concentrate	Dried whey protein concentrate		
Maltodextrins	Dried corn syrup		
Cream	Cream		
Dried skim milk	Dried skim milk		
Secondary Ingredients			
Dicalcium phosphate	Maltodextrins	(Continued)	(Continued)
Mono and diglycerides	Dicalcium phosphate	Zinc sulfate	Salt
Guar gum	Mono and diglycerides	Salt	Iron amino acid chelate
Potassium chloride	Guar gum	Tricalcium phosphate	Tricalcium phosphate
Fructooligosaccharide	Potassium chloride	Taurine	Taurine
Powdered cellulose	Fructooligosaccharide	Niacin supplement	Niacin supplement
Dextrose	Powdered cellulose	Biotin	Biotin
DL-methionine	DL-methionine	Calcium pantothenate	Calcium pantothenate
L-arginine	L-arginine	Copper proteinate	Vitamin A supplement
Magnesium sulfate	Magnesium sulfate	Vitamin A supplement	Copper proteinate
Sodium aluminosilicate	Sodium aluminosilicate	Thiamine hydrochloride	Thiamine hydrochloride
Lecithin	Lecithin	Manganese sulfate	Pyridoxine hydrochloride
Calcium silicate	Calcium silicate	Pyridoxine hydrochloride	Riboflavin supplement
Silicon dioxide	Choline chloride	Riboflavin supplement	Manganese sulfate
Choline chloride	Potassium citrate	Vitamin E supplement	Vitamin E supplement
Potassium citrate	Silicon dioxide	Vitamin D3 supplement	Vitamin D3 supplement
Dipotassium phosphate	Dipotassium phosphate	Folic acid	Folic acid
Iron amino acid chelate	Zinc sulfate	Calcium iodate	Calcium iodate
		Sodium selenite	Sodium selenite
		Vitamin B12 supplement	Vitamin B12 supplement
Fermentation products			
Dried Bifidobacterium bifidum	Dried Lactobacillus casei		
Dried L. fermentum	Dried L. fermentum		
Dried L. acidophilus	Dried L. acidophilus		
Dried Lactobacillus casei	Dried L. plantarum		
Dried Enterococcus faecium	Dried Enterococcus faecium		
Dried L. plantarum	Dried Bifidobacterium bifidum		
Dried Pediococcus acidilactici	Dried Pediococcus acidilactici		

Proximate analysis

The following table shows the results of the proximate analysis performed by the lab as compared to the Guaranteed Analysis (max/mins). The red shaded values indicate where the lab analysis determined that the component concentrations failed to adhere to the maximum or minimum guarantees. Most of those outside guaranteed limits are minor and within lab testing tolerances, except for crude fiber which is almost twice the guarantee.

	2024	2022
	Formulation	Formulation
Guaranteed Analysis		
Moisture (max %)	5.0%	5.0%
Protein (min %)	33.0%	33.0%
Fat (min %)	40.0%	40.0%
Crude fiber (max %)	0.5%	0.5%
Proximate analysis from the lab		
Moisture (max %)	4.8%	5.1%
Protein (min %)	33.1%	32.9%
Fat (min %)	40.1%	41.1%
Crude fiber (max %)	1.0%	0.9%
Carbs (NFE %)	15.8%	15.6%

These slight changes in the proximate values may require adjustments to previously used formula recipes, which can be easily calculated with the [Wildlife Formula Calculator](#).

Ash (dietary minerals)

The following table shows the results of the dietary mineral analysis performed by the lab. Over the last 15 years, PetAg® powdered milk replacers have tested lower in overall ash than Fox Valley Nutrition milk replacers, averaging 25% less in Calcium and 15% less in Phosphorus. This trend continues with the 2024 samples with Calcium testing at 1.04% (slightly above the generally accepted minimum concentration of 1% for milk) and

	2024		2022
	Formulation		Formulation
Dietary Macro Minerals (%)			
Calcium	1.09%	↑	1.04%
Phosphorus	0.73%	↑	0.67%
Ca:P ratio	1.50		1.55
Potassium	0.63%	↑	0.52%
Sulfur	0.52%	↑	0.44%
Magnesium	0.10%	↑	0.06%
Sodium	0.21%	↑	0.20%
Dietary Micro Minerals (ppm)			
Zinc	126	↑	121
Iron	108	↑	80
Manganese	11	↓	14
Copper	10	↑	9

0.73% for Phosphorus. [This is another example of where, in this case, the Ca:P ratio of 1.50 can be misleading. While a ratio of 1.50 is very acceptable in milk, in this case it is calculated from Calcium and Phosphorus concentrations that are relatively low. It is always advisable to look at the individual mineral concentrations as well as the ratio.] As for the other minerals, all concentrations tested higher than in 2022, except for Manganese.

Fatty acid profile

The fatty acid profile of the new formulation is shown in the following table. It shows only slight changes for each fatty acid and corresponding slight changes in total saturated and unsaturated fats when compared to the 2022 formulation. This is likely a change in the mix of vegetable oils

being used, with a slight decrease in linoleic fatty acid, which could suggest a decreased mix of sunflower, safflower, soybean, corn, and/or canola oil - which are all primary sources of linoleic acid. [The continued low concentration in total saturated fats would be problematic for species that have dietary needs of a higher concentration of medium chain triglycerides (MCT C:8 - C:12) such as Eastern cottontails and may require very minute MCT supplementation to formula recipes.]

Fatty Acid Composition - (dry powder basis - as tested AOAC 996.06)

Percent of powder	Esbilac	
	2024	2022
Caprylic (C8:0)	0.1%	0.1%
Capric (C10:0)	0.1%	0.1%
Lauric (C12:0)	0.2%	0.2%
Myristic (C14:0)	0.5%	0.6%
Palmitic (C16:0)	3.8%	3.8%
Stearic (C18:0)	2.0%	1.9%
Oleic (C18:1 Cis)	23.8%	22.5%
Linoleic (C18:2 Cis)	7.7%	8.5%
Linolenic (C18:3 a)	0.9%	1.0%
Other Fatty Acids	0.6%	2.4%
Total	39.6%	41.1%

Percent of powder	Esbilac	
	2024	2022
Saturated	7%	7%
Polyunsaturated	9%	10%
Monounsaturated	24%	23%
Trans fatty acids	0%	1%
Total	40%	41%

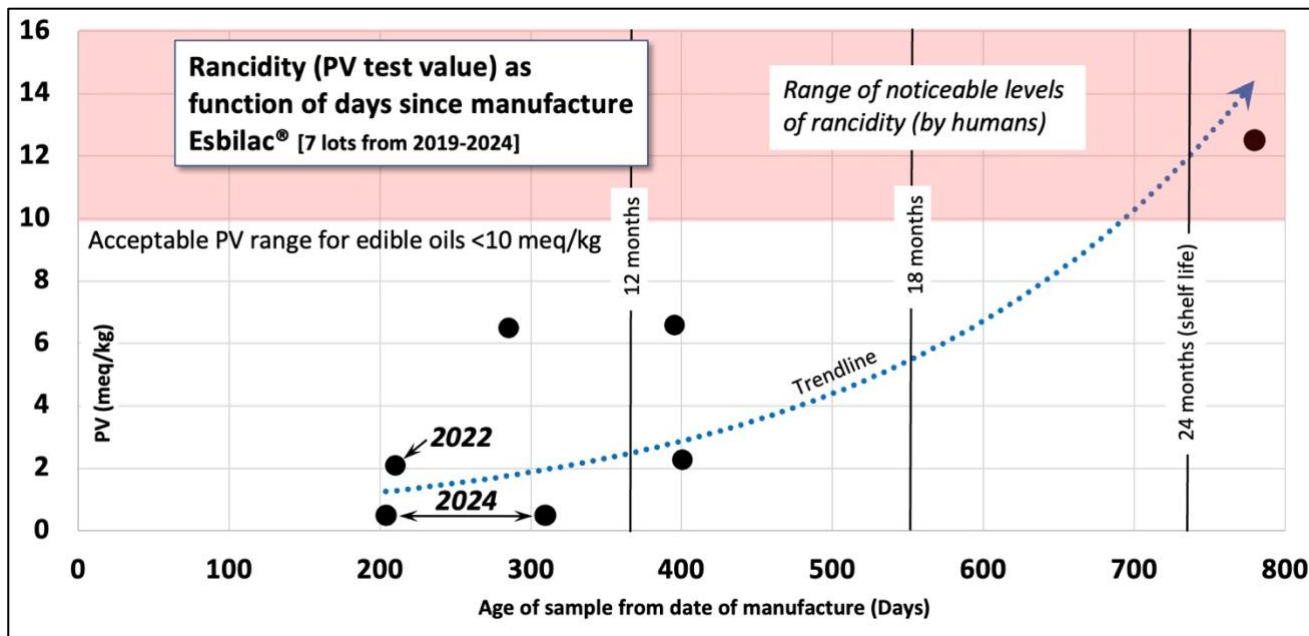
Percent of total fat	Esbilac	
	2024	2022
Caprylic (C8:0)	0.2%	0.2%
Capric (C10:0)	0.3%	0.2%
Lauric (C12:0)	0.4%	0.5%
Myristic (C14:0)	1.2%	1.5%
Palmitic (C16:0)	9.6%	9.2%
Stearic (C18:0)	4.9%	4.6%
Oleic (C18:1 Cis)	60.0%	54.7%
Linoleic (C18:2 Cis)	19.5%	20.7%
Linolenic (C18:3 a)	2.4%	2.4%
Other Fatty Acids	1.5%	5.8%
Total	100.0%	100.0%

Percent of total fat	Esbilac	
	2024	2022
Saturated	18%	17%
Polyunsaturated	22%	24%
Monounsaturated	60%	56%
Trans fatty acids	0%	2%
Total	100%	100%

Peroxide Value (PV) test results

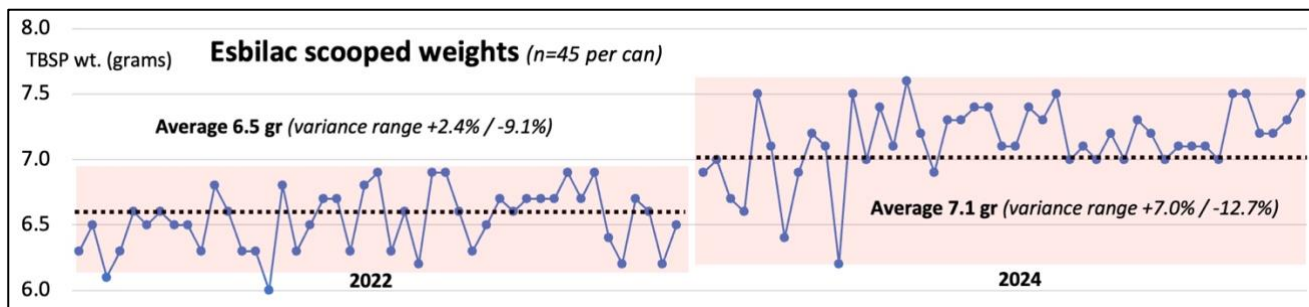
The 2024 Esbilac® samples were 7- and 10-months post manufacturing when tested for rancidity, with a test result of “not detected.” This means that if any rancidity was present, it was below a level that could be measured at the lab. This result is well within the max Peroxide Value (PV) of 10. Five pre-2024 samples had been previously tested (2017-2022) with a mean test PV of 6.6 (ranging

from 2.1 to 12.4). Esbilac® has generally shown test results of greater shelf stability (lower PVs) than the other PetAg® products of GME® and KMR®. Subsequent testing is needed to determine if the 2024 formulation continues to demonstrate acceptable shelf stability during the quoted 24-month product life span.



Physical characteristics and measurement error [tests performed by WildAgain]

The 2024 Esbilac® samples continue to have the characteristic very loose, fluffy and sticky consistency as in prior formulations, and similar to other PetAg® powdered milk replacers. This is likely a result of the spray-drying manufacturing process. This physical property continues to provide challenges when measuring a given amount of powder to include in a formula recipe. Mixing by parts using the provided scoop or some other volume measure results in measurement error ranging from +7.0% to -12.7%. This is an increase in the error range from the 2022 lot. Weighing the powder eliminates this unnecessary user induced error, provides for a uniform formula at each mixing and preparation ([Mixing Guide](#)), and helps insure consistent nutrition in the formula.



Disclosures

Esbilac® is manufactured and sold as a food supplement for dogs and not intended to be a sole source food for developing puppies. Wildlife rehabilitation is considered an off-label use.

Product assays performed by the independent lab adhere to the *Official Methods of Analysis of AOAC INTERNATIONAL* (Association of Official Analytical Chemists) and the *Official Methods and Recommended Practices of the AOCS* (American Oil Chemists Society).

The authors have no conflicts of interest with the independent lab, or any of the products or manufacturers discussed in this article.

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