

New 2022 Esbilac® is still not an “Instant Mix”

By Allan Casey

PetAg introduced a new formulation of Esbilac® in 2022 that included a change in its ingredients. Mixing directions were essentially unchanged, instructing to simply combine 1 part powder with 2 parts warm water and then whisk, stir, or shake. The inference is that it is designed as an ‘instant mix’ product, ready for immediate use, particularly for the canine species for which Esbilac® is manufactured. While this article focuses on reconstitution tests of the ‘new’ Esbilac®, results are consistent with previous milk powder product testing by WildAgain.

Effective and complete powder reconstitution is crucial in formula preparation. Inadequate powder dispersal can result in creating one or more of the following:

1. **Slow passage of food** through the GI tract; bloat, possible obstruction, constipation, or diarrhea.
2. **Dehydration**, as the GI tract works to process excessively dry material, which can potentially lead to kidney stress and damage.
3. **Bacterial growth** from stagnation of dry material not moving through the GI tract in a timely manner.
4. **Nutritional deficiency** resulting from poor digestion, absorption, and digestion from a substance that is not in the form the GI tract can process and use in young animals.
5. **Palatability issues**, from animals given less dissolved and possibly ‘gritty’ formula, prompting them to ‘fuss’ at feedings or even refuse to eat.
6. **Feeding utensil obstructions** from clumpy, sludgy or ‘gritty’ formula that can clog small syringes, nipples and gavage tubes.

Applying previously used testing protocols, WildAgain tested the new Esbilac® to see how the reconstitution properties compare to the pre-2022 Esbilac® as well as to samples of other milk replacer products. Testing methodology included two 15-gram samples of powder that were each added to 60 grams of 110°F warm water, allowed to wet and sink for 5 minutes, and then hand whisked for 1 minute or until all powder appeared to be fully mixed, with no remaining visible clumps.

The new Esbilac® powder did wet and sink and appeared to be fully mixed, which was encouraging



(in the left image). However, the same image (with contrast enhanced in the right for clarity) showed that portions of the powder had sunk, but had not fully dispersed, which was less encouraging.

Sample #1 was tested for powder dispersibility in the water (reconstitution) immediately after mixing, while sample #2 was refrigerated at 40°F for eight hours before testing. The liquid formula of both samples was poured through a stack of 3 successively smaller sized wire mesh sieves [500 μ ; 250 μ ; and 125 μ] to capture undispersed powder, with remaining residue then dried and weighed. For reference, normal milk particles range in size from .2 μ to 10 μ .

Upon testing sample #1, which was tested immediately after mixing, the lack of full dispersion became immediately visible when the liquid was poured over the first sieve (500 μ - largest mesh size). This revealed very small but noticeable clumps of still dry and unwetted powder (below).

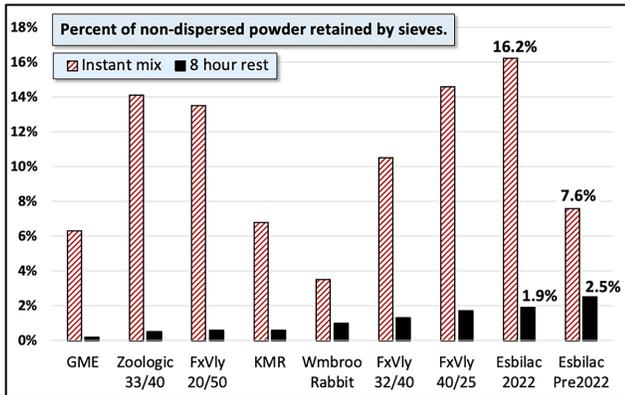


In total, the three sieves retained 16.2% of the unreconstituted powder from sample #1. The wet slush retained by the 125 μ sieve (smallest mesh size) is shown below. Feeding any poorly reconstituted formula to infant mammals (e.g., neonate opossums, rabbits and squirrels) is very concerning, creating the possible detrimental GI effects previously mentioned.



Conversely, in sample #2, which was allowed to rest the full 8 hours, only 1.9% of retained powder remained. As shown in the following chart, the amount of unreconstituted powder was **8 times higher** in sample #1, which was tested immediately after mixing, assuming an ‘instant mix’ product. The chart also demonstrates much improved dispersion efficiency when liquid formulas mixed from **all powdered products tested** are permitted to rest in a refrigerator

for a full 8 hours prior to feeding, allowing ample time for the powder to more fully disperse. [Smaller numbers in the chart are better.]



Conclusions and recommendations. Consistent with prior milk powder testing, the test on the new Esbilac® confirms that none of the milk replacer products tested and used by wildlife rehabilitators demonstrate effective ‘instant mix’ performance. Feeding excessive amounts of undispersed powder that has particles 100-500 times larger than normal liquid milk can create significant digestive risks to very small mammals with still developing GI tracts and should be avoided.

An easy change in formula preparation method of simply adding an 8-hour resting period prior to feeding can **reduce the amount of unreconstituted powder by an average of 90% across all products tested.** This significant improvement requires only a small amount of planning in making formula in advance. Additional formula information coupled with recommendations on powdered milk product handling, storage, recipe construction to match mother’s milk, blending and mixing are available at [Ewildagain.org](https://www.ewildagain.org/wildlife-formula-and-feeding) <https://www.ewildagain.org/wildlife-formula-and-feeding>.

Ewildagain.org has more complete testing information on the new Esbilac®, including lab tests for protein, fat, and carbohydrate content; dietary minerals; and fatty acids - plus comparisons to pre-2022 lots of Esbilac® - as well as other milk replacers used with wild mammals. WildAgain’s wildlife formula calculator now includes the ‘new Esbilac®’ and others.

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Author

Allan Casey, a licensed wildlife rehabilitator since 1986, has researched and analyzed powdered substitute milk replacers used by rehabilitators for over 15 years.