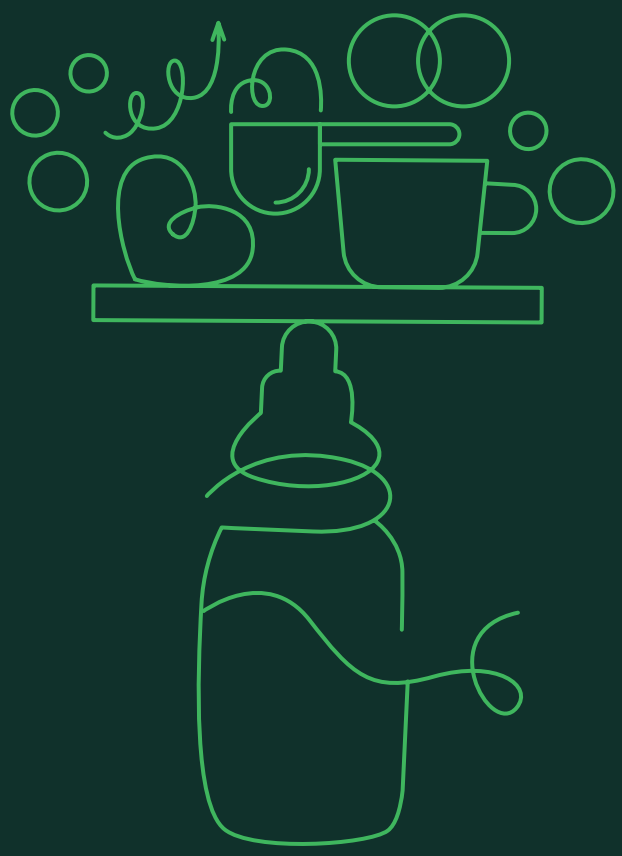

Whey and Casein

INGREDIENT GUIDE

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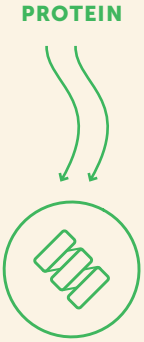
BENEFITS OF WHEY AND CASEIN

While comparable in many ways, whey and casein do have some differences. They differ in how they function, as well as in their biological purpose. Much of what we know about whey and casein pro-tein comes from research in adults and animals, but some of these learnings help us under-stand how these proteins might behave in infants.[3, 8, 9]

Whey protein has been shown to be critical for increasing muscle protein,[3] possibly due to its high concentration of branched chain amino acids. On the other hand, casein plays a role in binding calcium and phosphorus, which may help the body use these import-ant minerals to build healthy bones.[10, 11] Each protein type plays an important role in overall health and develop-ment.

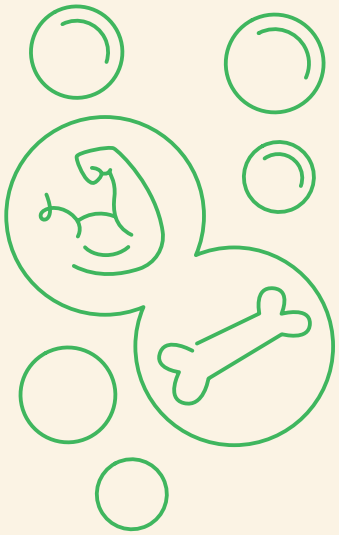


WHAT ARE WHEY AND CASEIN?

Whey and casein are two different types of protein. They're the sources of protein found in both breast milk and cow's milk, as well as the milk of any other mammal.[1] These two proteins make up the protein component of most routine infant formulas. Protein is essential for growth and development, tissue repair, and many metabolic functions throughout the body.[2]

Both whey and casein are considered high-quality proteins[3] and provide all nine essential amino acids[4] required to support growth and development. Each of these proteins also has a high biological value, which is a measurement of how much of the protein is retained in the body for growth.[5]

All of these characteristics make whey and casein trusted sources of protein in many infant formulas.[6, 7]



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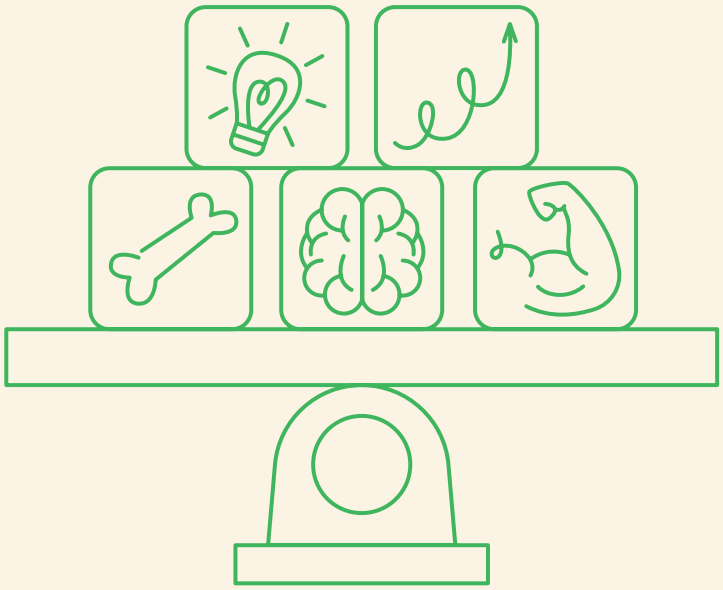


DIGESTIBILITY OF WHEY AND CASEIN

In acidic environments, like the stomach, whey remains a liquid, while casein forms curds. An infants GI tract still has a lot of maturing to do, and high levels of casein may not be well-tolerated.

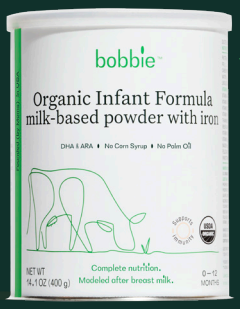
WHEY AND CASEIN RATIOS

In infant feedings—whether breast milk or formula—whey and casein are often discussed in the context of their ratio, or the percentage of each protein type.

In human milk, the ratio between whey and casein is dynamic, and it shifts throughout the course of lactation. In the early days of milk production, breast milk concentration of whey is high, with a whey to casein ratio of 80:20. After the first few weeks, whey declines and casein increases until they reach the concentrations seen in "mature" breast milk: about 60% whey and 40% casein.[12]

On the other hand, casein is the dominant protein in cow's milk, contributing roughly 80% of the protein, while whey makes up about 20%.[12] For infant formulas based on cow's milk, the whey and casein ratio is modified during the manufacturing process to achieve a ratio closer to that of breast milk.

Whey: Casein
60:40



TAKE-AWAY

Whey and casein are high-quality proteins with all nine essential amino acids. They are trusted sources of protein that support growth and development in infants and children. Some specialty infant formulas modify the amounts of whey and casein for medical purposes. For most healthy infants, infant formula with both whey and casein is well-tolerated.

Bobbie organic infant formula is 60% whey and 40% casein, similar to the whey to casein ratio in mature breast milk. Bobbie organic infant formula provides 2 grams of protein per 100 kcal, meeting the requirements for both US and EU infant formula.

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