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BCH 308 ASSIGNMENT

Milk is a product of evolution designed specifically for the nutrition of infant mammals. It bridges the nutritional gap between intrauterine dependence and extrauterine independence. The same nutrients are present in the milk of all species, although in different proportions. Such quantitative differences appear to be an adaptation to the nutritive requirements of the young of each species.  
That said, Cow milk is not very similar to human milk. Both are about 88% water, but human milk has 7% carbohydrate, 1.3% protein, and 4.1% fat. Cow’s milk has about 4.5% carbohydrate, 3.3% protein, and 3.9% fat.

## What’s really important is the types of fat, the protein levels and type of protein. Calves need to grow quickly, so there’s more protein in cow’s milk than in human milk. Humans need to develop their brain and nerves quickly, so there are less protein and more fat. **The major differences between cow and human breast Milk**

Protein:  
Leucine is a unique amino acid which is linked with growth. Animals that grow quickly after birth have higher levels of protein and leucine in their milk; cows have 3.3% leucine, humans have 0.9% leucine. Calves double their birth weight in 40 days; humans double theirs after 180 days.

Another difference is the ratio of casein to whey in milk. Cow’s milk has a ratio of 80:20, human’s 40:60 casein: whey. Casein is harder to digest. So humans don’t have as much in their milk.

Fat:

whole cow’s milk has almost the same amount of fat as human milk, but there the similarity ends. Cow’s milk contains 2.5% saturated fat, 1.0% monounsaturated and 0.1% polyunsaturated fat, while human milk contains 1.8% saturated fat, 1.6% monounsaturated fat and 0.5% polyunsaturated fat.

The higher level of unsaturated fatty acids in human milk reflects the important role of these fats in brain development. In humans the brain develops rapidly during the first year of life, growing faster than the body.

Human milk also contains the fatty acids arachidonic acid and docosahexaenoic acid, both of which are essential for brain development and functioning; cow’s milk does not contain these fatty acids.