

# Soy Formula Doesn't Inform about Soyfoods

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What is the relationship between soy infant formula (SIF) and the general category of soyfoods? As discussed below, and in a second blog to follow, when it comes to nutrition, these two food product categories are, for the most part, unrelated.

SIF in some form or fashion has been used for nearly 100 years but only within the past 50 or so has it become commercialized on a large scale.<sup>1</sup> At its peak, estimates are that as many as 25% of U.S. babies consumed SIF at some point in their development although the current estimate is only about half that amount.<sup>2</sup> Mothers often choose SIF when their infants develop colic while consuming cow's milk formula.

Soyfoods, especially tofu, began to be embraced by vegetarians and health-conscious Americans in the late 1960s/early 1970s as high-quality, efficiently produced sources of protein. Books like *Diet for a Small Planet* (1971) and *The Book of Tofu* (1975) greatly helped popularize soy. However, the mainstreaming of soy didn't begin until the early 1990s. That is when researchers and governmental health organizations, such as the National Cancer Institute, began recognizing the possibility that soyfoods might confer health benefits, especially concerning the prevention of chronic disease, that were unrelated to their ability to help meet nutrient needs.<sup>3</sup> This interest in soy coincided with a general uptick in the interest in plant-based diets and phytochemicals.

Health professionals recommending the consumption of soyfoods for their chemopreventive or cholesterol-lowering effects weren't arguing that mothers should stop breast feeding or even switch from cow's milk formula to SIF. No one is or was suggesting that infants should consume SIF to lower their cholesterol levels as a means of reducing their risk of heart disease. This is true even in the case of breast cancer prevention, where early intake appears to be key.<sup>4</sup>

For more than 20 years, one of the more intriguing hypotheses involving soyfoods is that consumption during childhood and/or adolescence reduces breast cancer later in life.<sup>5</sup> Soybean isoflavones are thought to impact cells in the developing breast in a way that makes them less likely to be transformed into cancer cells later in life. There is considerable animal, and more importantly, epidemiologic evidence supporting this hypothesis. However, even in the case of breast cancer prevention, no one argues that SIF use will reduce breast cancer risk.

The above-referenced epidemiologic evidence consists primarily of studies evaluating adolescent intake, although one very small study that also examined childhood soyfood intake (5-11 years) found that this period of exposure was more protective than soy intake during the teenage years.<sup>6</sup> Nevertheless, the notion that the historically low breast cancer mortality rates in soyfood-

consuming countries are due in part to early soyfood intake in no way informs recommendations to consume SIF. Asian infants were primarily breast fed and when formula was used, it was typically cow's milk formula, not SIF.

Tofu is a traditional weaning food, but it is generally not introduced until about 6 months of age. SIF, on the other hand, can be introduced at birth. It isn't known whether isoflavones have any impact on infants as a result of SIF use, but those who have raised concern typically emphasize that the most sensitive period is the first few weeks of life.<sup>7</sup>

It isn't only that there are major developmental differences between very young (8,9) In contrast, the consumption of 50 g tofu by a 6-month old would result in an isoflavone exposure of only 1-2 mg/g body weight. Thus, isoflavone exposure in infants consuming SIF not only occurs at a time when in theory the infant may be most sensitive to isoflavones, but isoflavone exposure will also be much higher. And yet, the U.S. National Toxicology Program concluded there is minimal concern for adverse developmental effects in infants fed SIF.<sup>10</sup>

Given the different feeding situations, one might wonder why a blog on soyfoods would address SIF at all. The reason is that often SIF and soyfoods are conflated. The results of studies involving SIF are often extrapolated to infants and children consuming soyfoods. It is true that a lack of hormonal effect of SIF in infants strongly suggests that hormonal effects won't be observed in children consuming soyfoods. This line of thinking is logical because as noted, isoflavone exposure in infants consuming SIF is greater than in children consuming soyfoods and comes at a more sensitive time. Conversely however, for these very same reasons, it isn't appropriate to conclude that if hormonal effects in infants are observed in response to SIF, that soyfood consumption will produce similar effects in children.

When all is said and done, this blog will continue to monitor and report on studies involving SIF. However, this will be done with the recognition that this coverage won't directly relate to the overall message that soyfoods can positively contribute to an overall healthful diet.

## References

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