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Comparing Soy Protein to Whey Protein with FBFs using Rats

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Abstract

A 4-week study was conducted using rats as a model to analyze iron and hemoglobin levels after their consumption of fortified blended foods (FBFs). 100 total rats were divided into ten separate groups which were each fed a specific FBF. The FBFs used included four sorghum-based, three corn soy-based, and two WPC-based blends in addition to one control blend. These groups comprise of varying levels of sugar to test if sugar has an effect on iron intake. The subjects' weight would be measured once a week along with food intake every other day during feedings. Once the study was completed, we compared whey protein groups to soy protein groups, because soy is a cheaper alternative to whey, which showed that the two groups were equally efficacious regarding iron status.

Introduction

- Those in developing countries who receive food aid, such as FBFs are at an increased risk for iron deficiency anemia as well as malnutrition.
- Children in these countries are primarily fed FBFs due to them being malnourished.
- Being poorly fed causes health issues within the body including a lack of growth in children and its ability to combat diseases.

Objectives

- To distinguish if soy protein is equivalent to whey protein in regard to growth and iron status in Fortified Blended Foods (FBFs)
- Determine if varying levels of sugar can affect the outcomes using a rat model. Soy is being studied because it is a cheaper alternative than whey protein and if proven equivalent, can be used as a new protein for food aid from the United States.

Methods

- 4 week study conducted on 100 rats
- Divide rats into 9 groups of specific FBFs with one control group
- Feed rats every other day while measuring food intake
- Weigh rats weekly
- Analyze iron outcome and hemoglobin levels once the study is complete

Results

- Hemoglobin levels were similar amongst CSB and SSB groups
- Varying levels of sugar report similar results within their specific FBF.

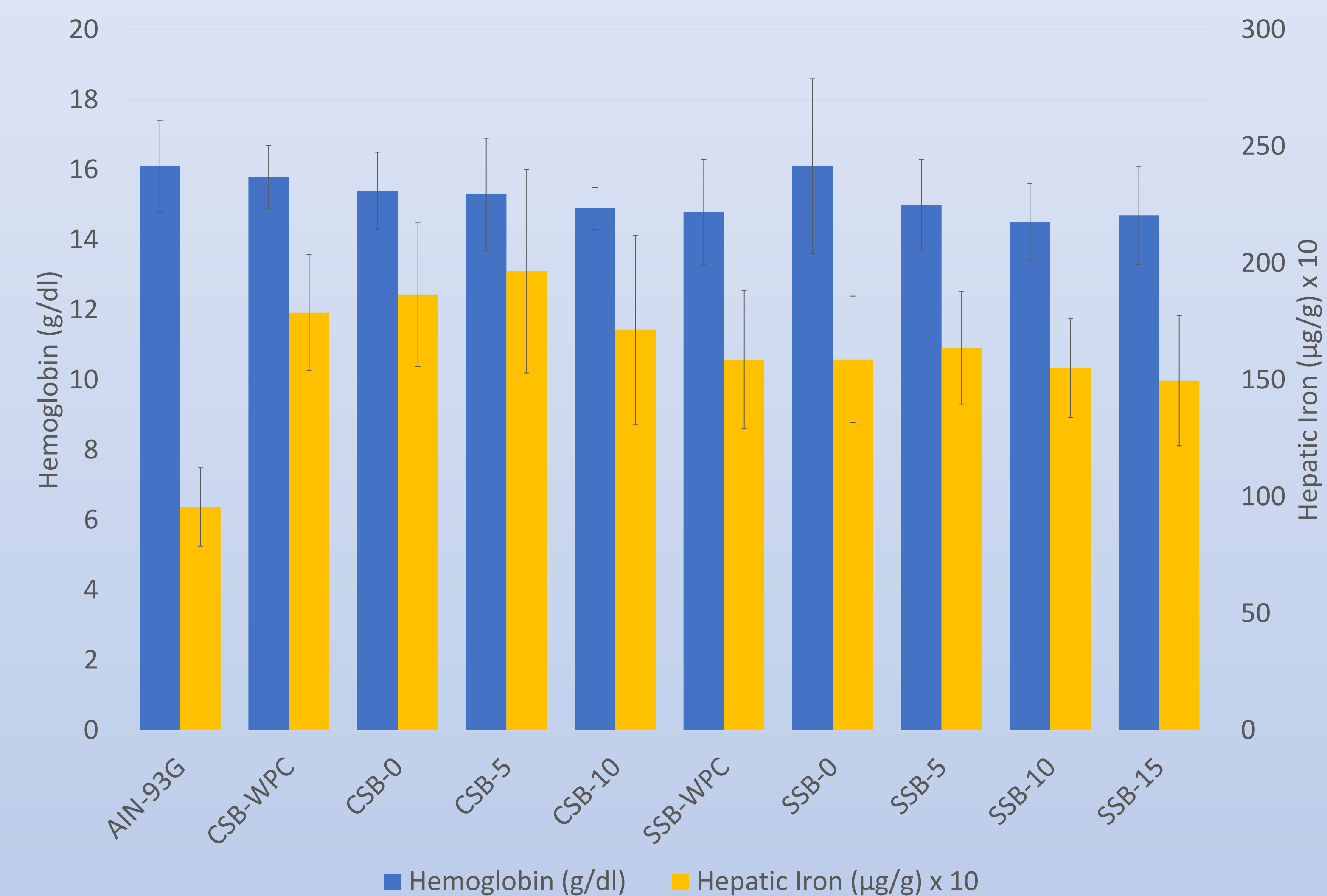


Table 1: FBF formulations (Percentages)

	Corn-Soy Blends				Sorghum-Soy Blends				
	CSB-WPC	CSB-0	CSB-5	CSB-10	SSB-WPC	SSB-0	SSB-5	SSB-10	SSB-15
Low-fat Soy Flour	15.2	32.0	33.0	34.0	16.0	32.0	33.0	34.0	35.0
Degermed Coarse Corn Flour	48.1	55.8	49.8	43.8	—	—	—	—	—
Decorticated White Sorghum Flour	—	—	—	—	47.8	56.3	50.3	44.3	38.3
Whey Protein Concentrate	9.5	—	—	—	9.5	—	—	—	—
Sugar	15.0	—	5.0	10.0	15.0	—	5.0	10.0	15.0
Vegetable Oil	9.0	9.0	9.0	9.0	8.5	8.5	8.5	8.5	8.5
Vitamin Mineral Premix	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2

0-15 Indicates varying sugar levels by percentage.
CSB: Corn Soy Blend WPC: Whey Protein Concentrate SSB: Sorghum Soy Blend

Conclusion

With the data gathered, we determined that soy protein is just as efficacious as whey protein. This means that United States food aid could potentially switch from whey protein to soy to save money and have the same results. We also found that varying levels of sugar do not affect the overall outcome of the FBFs. Sugar can be added in order to the FBFs to make them more desirable amongst those who consume these.