

Impact of food supplements on IGF-1 in children with moderate acute malnutrition: Secondary analysis of a randomised 2x2x3 factorial trial in Burkina Faso

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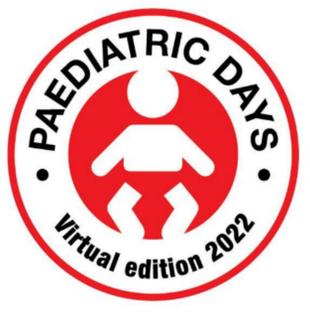
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INTRODUCTION

- Moderate acute malnutrition (MAM) affects approximately 33 million children under 5 years worldwide
- MAM is associated with increased morbidity and mortality from infectious diseases
- Insulin-like growth factor 1 (IGF-1) is an important growth factor in childhood.
- IGF-1 is reduced in malnourished children compared with age-matched controls, but it is unknown how food supplementation affects IGF-1.

OBJECTIVE

To investigate the impact of foods for treatment of MAM on serum IGF-1 (sIGF-1).

METHODS

		Dry skimmed milk (mass%)		
CSB	Dehulled soy	0%	8%	20%
	Soy isolate	0%	8%	20%
LNS	Dehulled soy	0%	8%	20%
	Soy isolate	0%	8%	20%

Table 1: 2x2x3 factorial design for supplementation intervention

- Secondary analysis of randomized 2x2x3 factorial trial in Burkina Faso to assess the effectiveness of supplementation on fat-free mass.
- Double-blind with regard to quality of soy and quantity of milk, but not matrix (CSB vs. LNS)
- Children aged 6-23 months with MAM
- Received 500 kcal/day for 12 weeks
- sIGF-1 was measured at inclusion and after supplementation
- The effect of the experimental intervention on sIGF-1 was assessed using linear mixed models with site as random effect.

Ethical approvals

- Burkina Faso: 2012-8-059
- Denmark: 1208204

Trial number

- Trial number: ISRCTN42569496



Photos by Kim F. Michaelsen with parental consent

RESULTS

	Change	95% CI
Overall sIGF-1 increase	6.7 ng/mL	6.1; 7.3
Age-expected sIGF-1 increase	-0.3 ng/mL	-0.4; -0.2
sIGF-1 increase in LNS vs CSB	-8%	-12; -3
LNS vs CSB inflammation corrected	Slightly attenuated	
Soy isolate vs dehulled soy	6%	1; 12
Milk	Did not affect sIGF-1	

Table 2: Changes in IGF-1 during 12 weeks supplementation in 1446 (90%) that had sIGF-1 measured both before and after.

- 1609 children were included in the Treatfood trial
- Of these 1446 (90%) had sIGF-1 measured at both time points.
- Mean age of the children was 12.4 (\pm 4.9) months
- 45% of the children were male
- sIGF-1 increased 6.7ng/mL (95%CI 6.1;7.3) compared with an expected age-dependent decrease of 0.3 ng/mL (95%CI 0.2;0.4) without supplementation.
- Children who received LNS compared with CSB had lower increase in sIGF-1 (-8%, 95%CI -12;-3)
- This difference in increase became slightly attenuated when sIGF-1 was corrected for inflammation.
- Children who received isolate soy compared with dehulled soy had higher increase in sIGF-1 (6%, 95%CI 1;12).
- Milk content did not affect sIGF-1.

CONCLUSION

- sIGF-1 increased during supplementation and may be used as a marker of improved nutritional status, but further studies are needed to determine optimal interpretation.
- The lower increase with LNS vs. CSB was only partly explained by increased inflammation with LNS, and needs further investigation.
- Isolate vs. dehulled soy led to a higher increase which may be due to antinutrients in dehulled soy

ACKNOWLEDGEMENT

