

Home-level Fortification ----China YingYangBao Programme

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CONTENTS

01

The Importance of Early Childhood
Nutrition

02

Home-level Fortification with
YingYangBao (YYB)

03

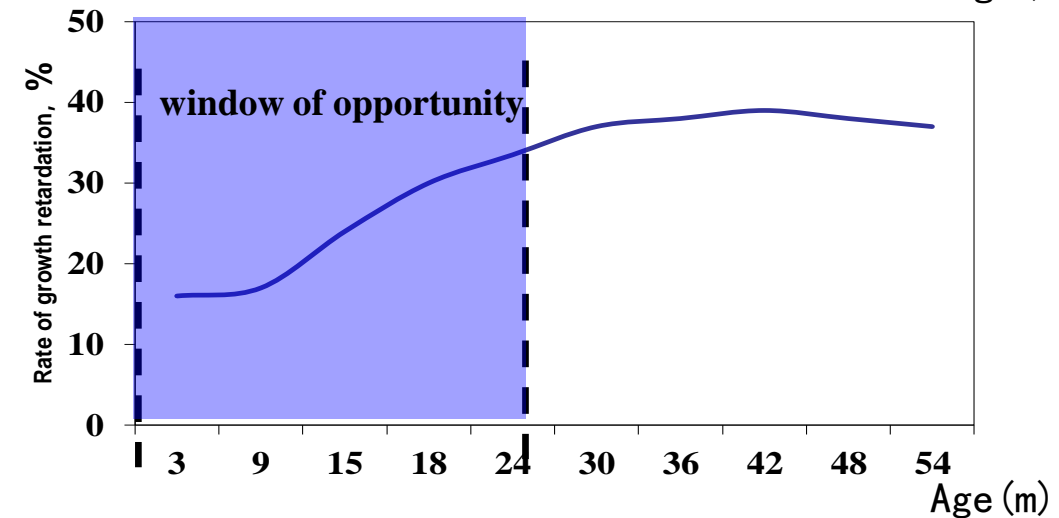
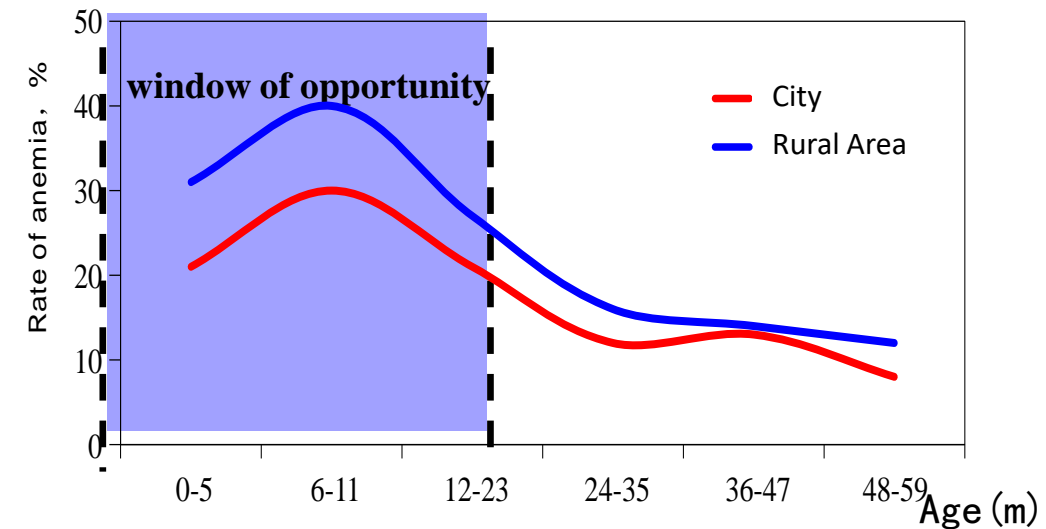
Children Nutrition Improvement Project in China
(YYB Programme)

01

The Importance of Early Childhood Nutrition

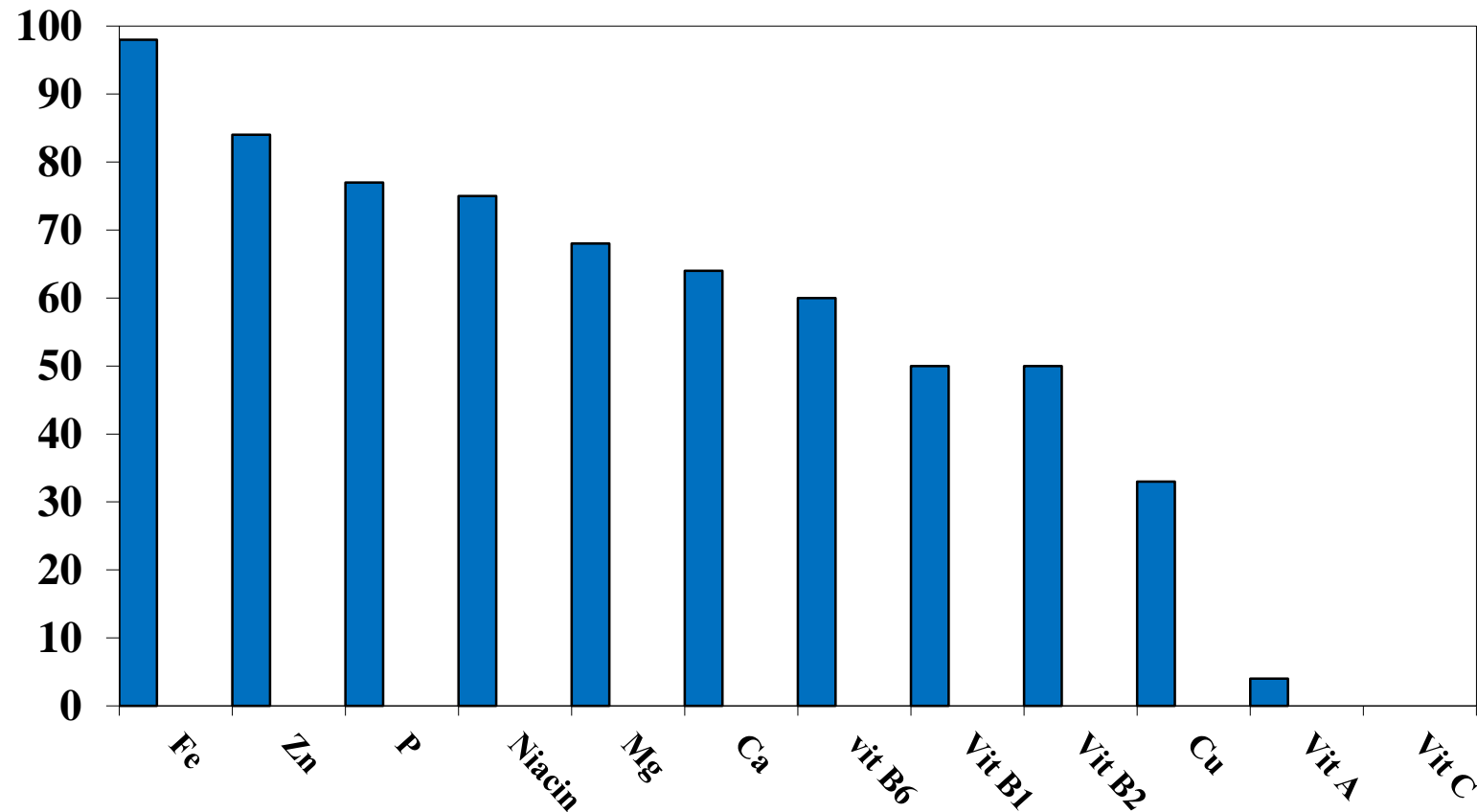
The complementary feeding period for nutritional intervention: A window of opportunity

- Results from continuous monitoring between 1990 and 2005 revealed that improper complementary feeding practices were prevalent among infants and young children aged 6 to 24 months in rural China, leading to malnutrition.
- The prevalence of anemia was extremely high among children aged 6 to 24 months, significantly higher than in other age groups. Furthermore, the anemia rate among rural children was considerably higher than that among urban children.
- The rate of growth retardation showed an upward trend between 6 and 24 months, gradually plateauing after 24 months.



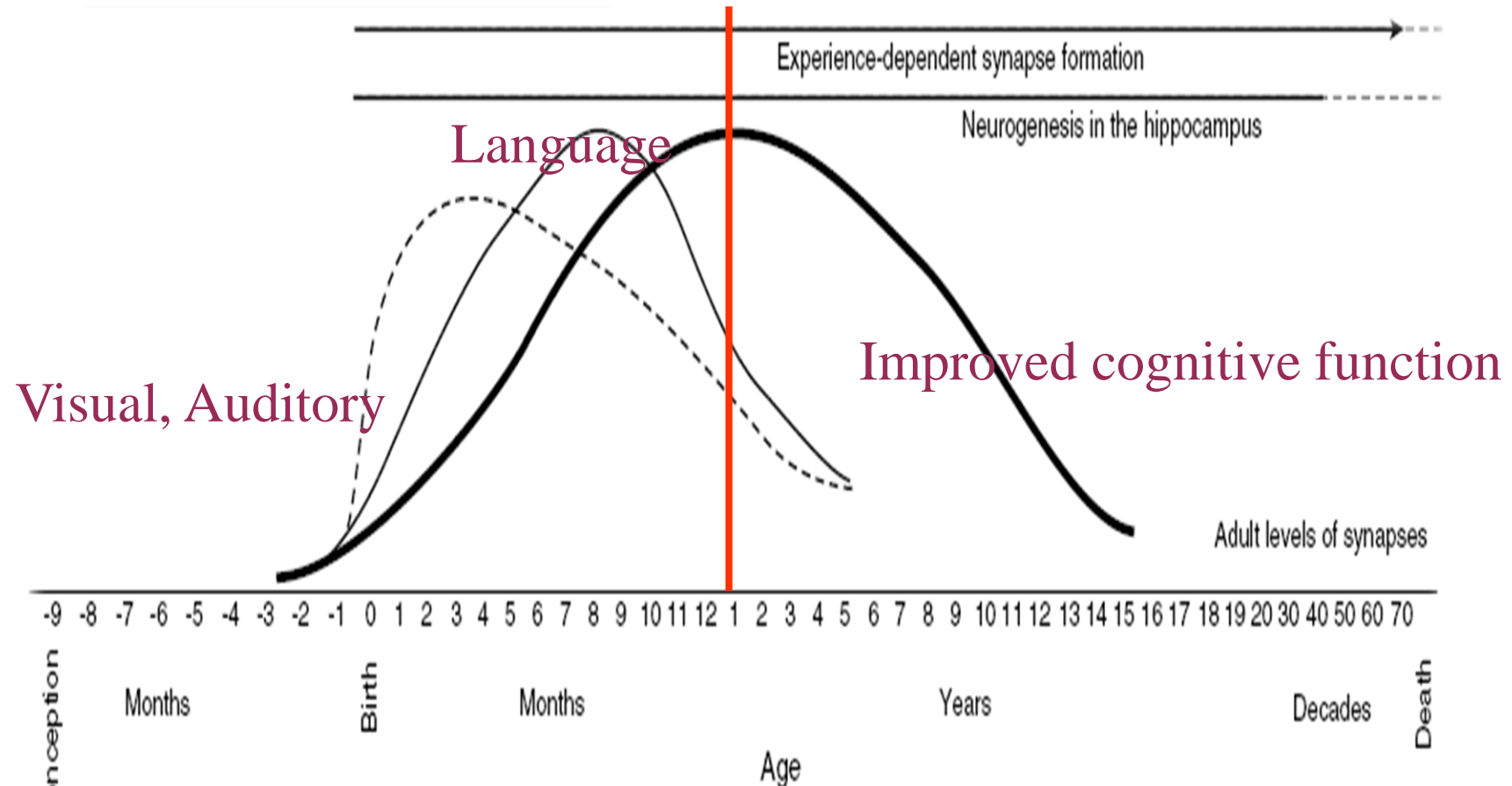
Infants aged 6-8 months need high-density complementary foods

- Approximately 98% of iron should be intake from complementary foods.
- Apart from Cu, Vit A and Vit C, 50% of the other micronutrients need to be provided through complementary foods.



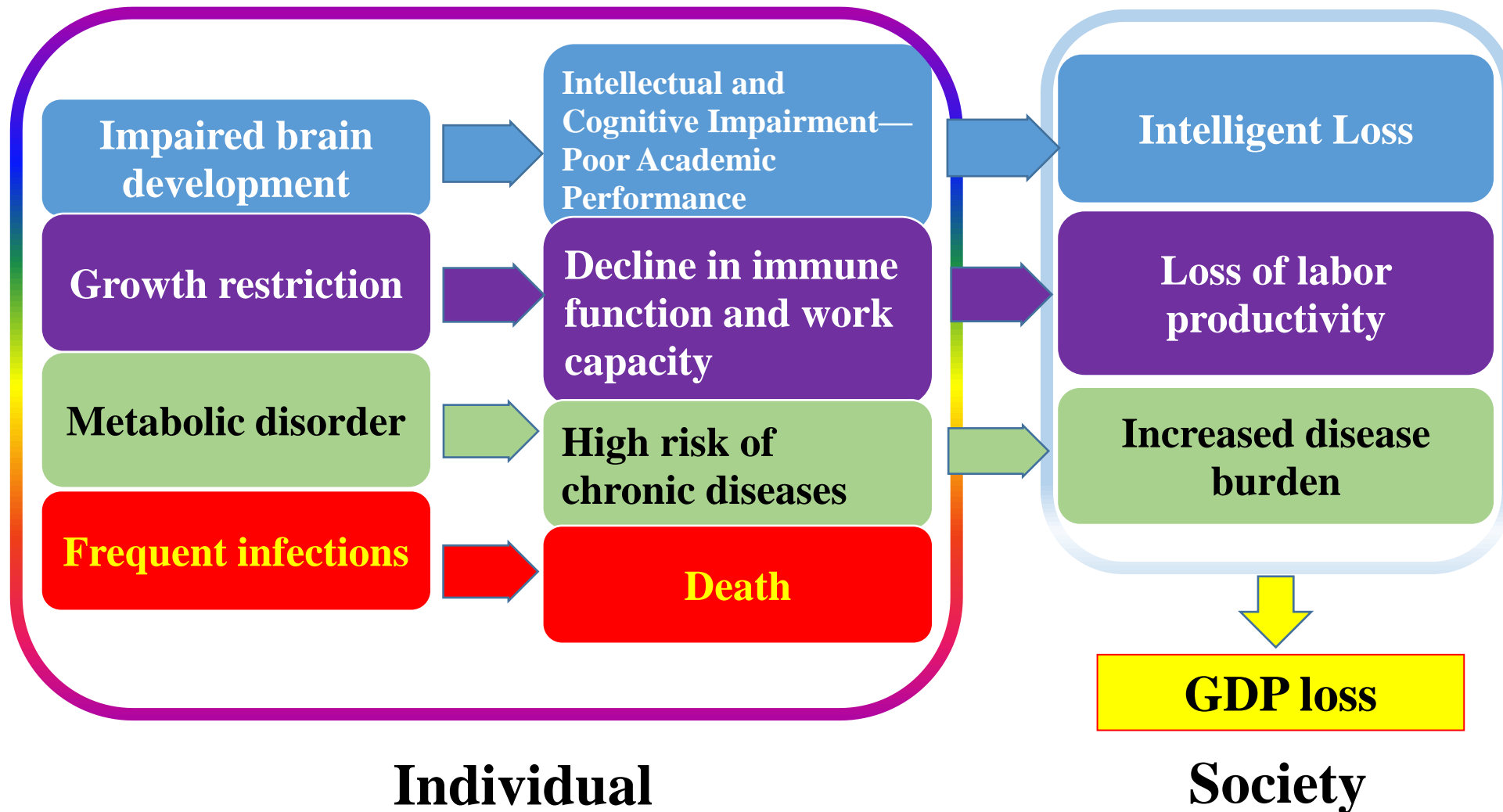
The period from the fetal stage to the age of 24 months is a crucial time for physical, intellectual, emotional development and health quality

- By age 2, 80% of the brain's size and the number of neurons have developed.
- Weight increases fivefold and height doubles within the first three years.



During the fetal stage, the senses of sight, hearing, and language begin to develop.

The Dangers of Early Malnutrition





Home-level Fortification with YYB

Development of YingYangBao (YYB) in China

Foundation of science and technology

Put forward plans to improve complementary food nutrition
 Practice in Gansu province:
 --Professor Chunming CHEN carried out the effect of nutrition pack in 5 counties of Gansu Province
 Ministry of Health
 --In 2006, the Ministry of Health (MoH) approved the pilot application.
 -- Supported by GAIN.

Popularization and application

The large-scale application of government organizations
 --Supported by MoH, The NINH of China CDC led YYB intervention project in Shanxi and Shaanxi provinces.
 --Carry out the 11th Five-Year Plan National Science and Technology Support program, CFSs intervention research was carried out in 12 counties of 6 provinces. Covering more than 8,700 children under the age of 5.
 --Formulate the national standard <<General Standard for Complementary Food and Nutrition Supplements>>
 --The MoH organized nutrition intervention programs for 6 to 24 months of age in 8 counties in Wenchuan earthquake-stricken areas and explored public health models.

National nutrition program

Nutrition improvement program for children in poor areas
 --It was launched in 2012, covering 280,000 infants and young children in 100 counties in 10 provinces
 --From 2014, the government began to invest CNY 500 million (USD 73.78 million) to purchase YYB
 --By 2023, a total of 19.28 million infants and young children had been benefited in 832 counties in 22 provinces.

First phase

Second phase

Third phase

2000

2005

2012

2023



YingYangBao (YYB) Intervention Project in Poor Rural Areas of Gansu (2001–2003)

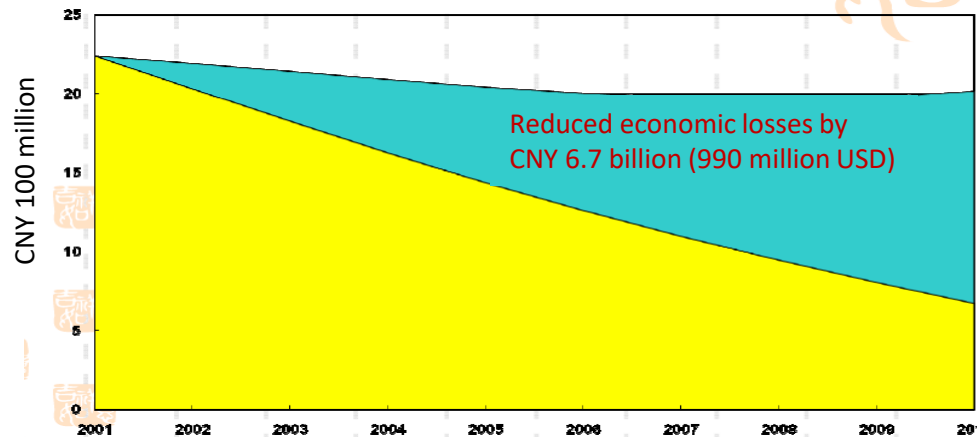
Objective: Effects of complementary food fortification on physical growth and intellectual development in infants and young children.

Methods: A total of 1,500 infants aged 4-12 months were recruited from 5 poor counties in Gansu Province. YYB was provided daily, with high-dose Vit A supplementation every 6 months. Physical growth, anemia status, cognition, social-emotional development, and communication behaviors were assessed.

Results: Home fortification with YYB promoted early childhood growth and development and improved the status of anemia, and had a positive impact on children’s intellectual and psychological development in later years. Home fortification with YYB simplified nutrient supplementation and held significant potential for improving child nutrition in poor areas.



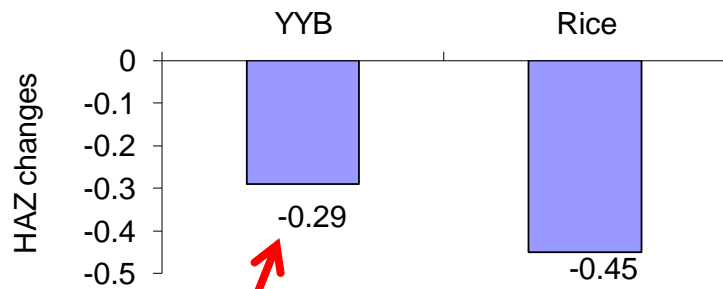
There are 260,000 infants and toddlers under the age of one in Gansu. If each child receives a YYB costing CNY 0.5 (USD 0.07) per day, the total cost over 10 years would be CNY 450 million (USD 66.47 million), resulting in a cost-benefit ratio of 1:15.



	Formula1	Formula2
Energy	44 kcal	44 kcal
Protein	3.9 g	--
Ca	385 mg	--
VD	280 IU	--
VB2	0.2 mg	--
Iron	6.0 mg	--
Zinc	4.1 mg	--

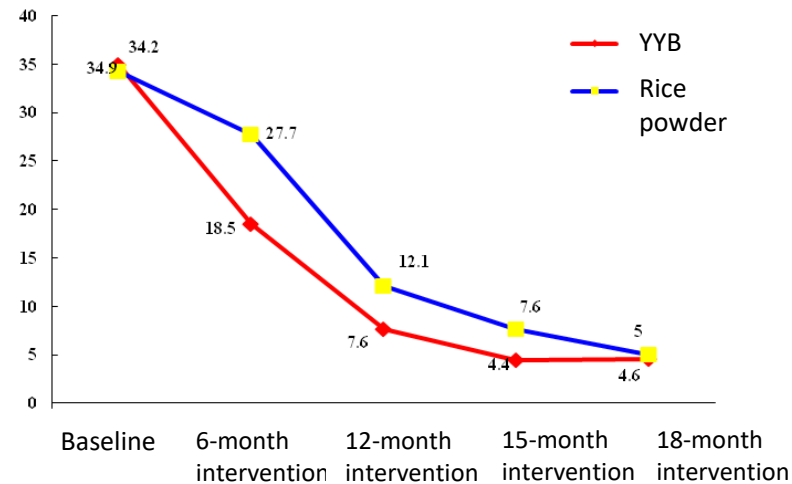
YingYangBao (YYB) Intervention Project in Poor Rural Areas of Gansu (2001–2003)

- The improvement of height-for-age in YYB group was better than rice flour group.

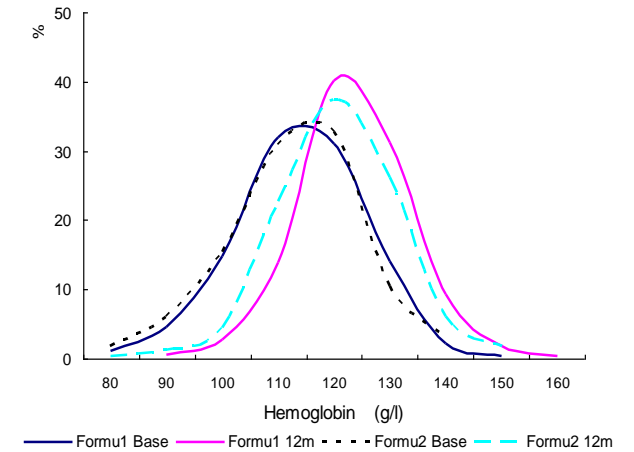


The average height of children at 24 months was 1.3 cm higher

- Anemia prevalence reduced



- Distribution curve of hemoglobin



Formula 1 YYB
Formula 2 Rice Powder Sachet

National Standard for Complementary Food Supplements

- 2008: General Principles for Complementary Food Supplements (GB/T 22570-2008)
- 2014: National Food Safety Standard (GB 22570-2014)

Complementary Food Supplements: A supplement containing multiple micronutrients (vitamins and minerals, etc.), with or without a food base and other excipients. It is added to ready-to-eat complementary foods for infants and young children aged 6–36 months, and may also be used for children aged 37–60 months.

Classifications:

- Complementary food supplement foods (10–20 g/day)
 - YYB
 - Nutrient-fortified spreads
- Foodlets (1–3 g/day)
- Sprinkles (0.8–2 g/day)



YYB



Sprinkles



Spreads



Foodlets

National Standard for Complementary Food Supplements

Applicable to: Infants/young children (6–36 m) & Children (37–60 m)

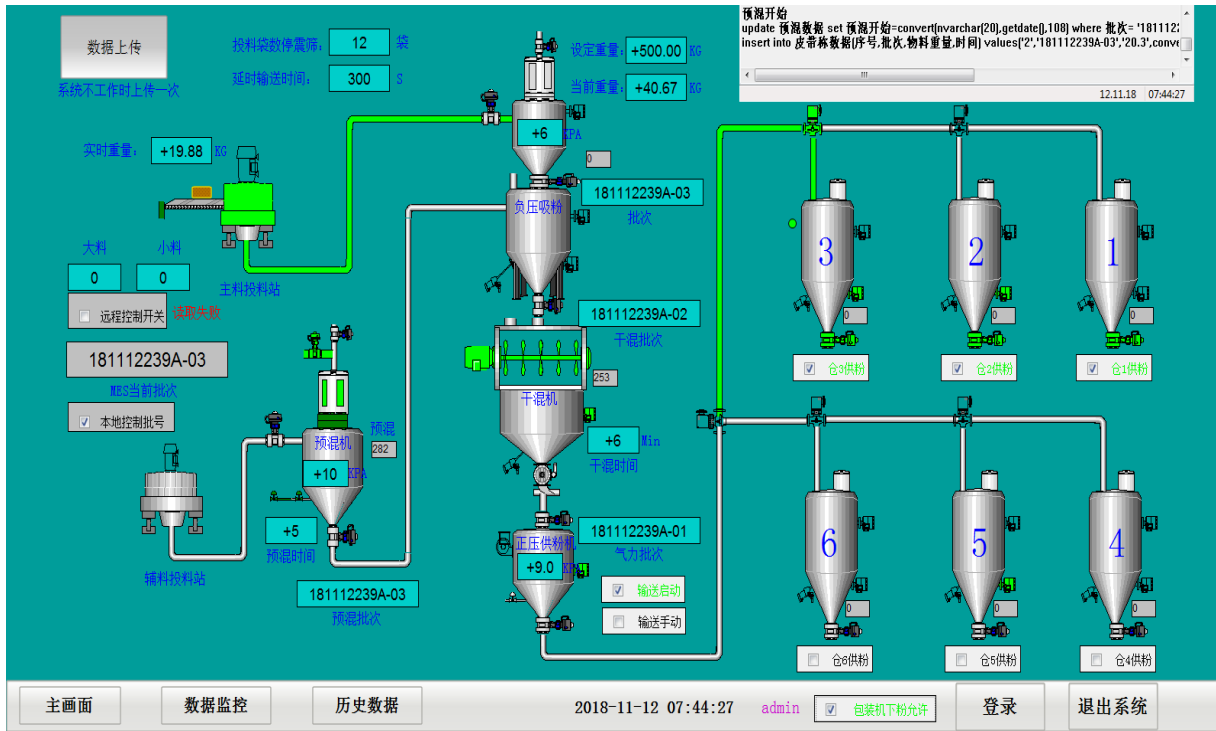
Food Base Requirement: one or more of the following are used as the food matrix: soybean, soy protein products, dairy, or milk protein products. Soy-based ingredients must undergo high-temperature processing to eliminate anti-nutritional factors (e.g., trypsin inhibitors).

Protein Requirement: High-quality protein, constituting $\geq 25\%$ of total content. For complementary food supplements, 2.5–5.0 g of high-quality protein per daily serving.

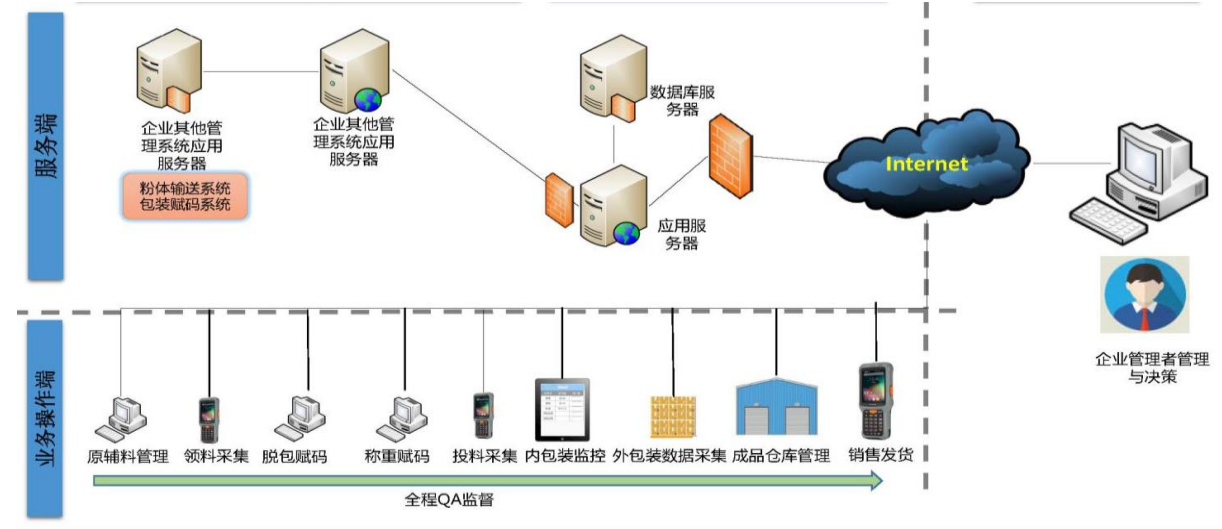
Supplemented Nutrients :

Micronutrients	Nutrient Name	Minimum	Maximum
Fat-soluble vitamins	Vitamin A, Vitamin D, Vitamin E, Vitamin K	30% RNI (or AI)	90% RNI (or AI)
Water-soluble vitamins	Vitamin B ₁ , Vitamin B ₂ , Vitamin B ₆ , Vitamin B ₁₂ , Pantothenic acid, Choline, Biotin, Vitamin C	40% RNI (or AI)	50% UL
	Folate and Niacin	40% RNI (or AI)	100% RNI
Macrominerals	Calcium	30% RNI (or AI)	60% RNI (or AI)
Trace elements	Iron, Zinc	30% RNI (or AI)	90% RNI (or AI)

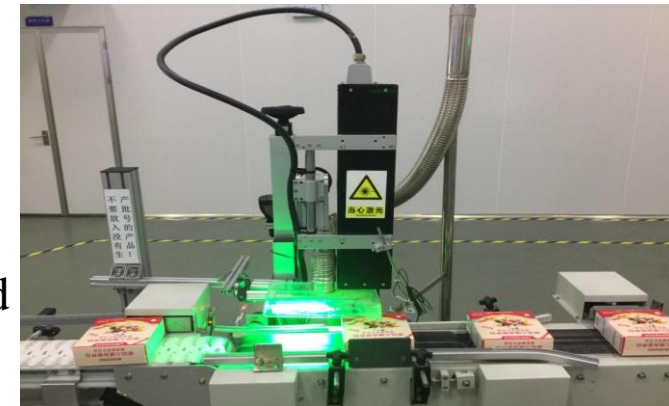
YYB Production



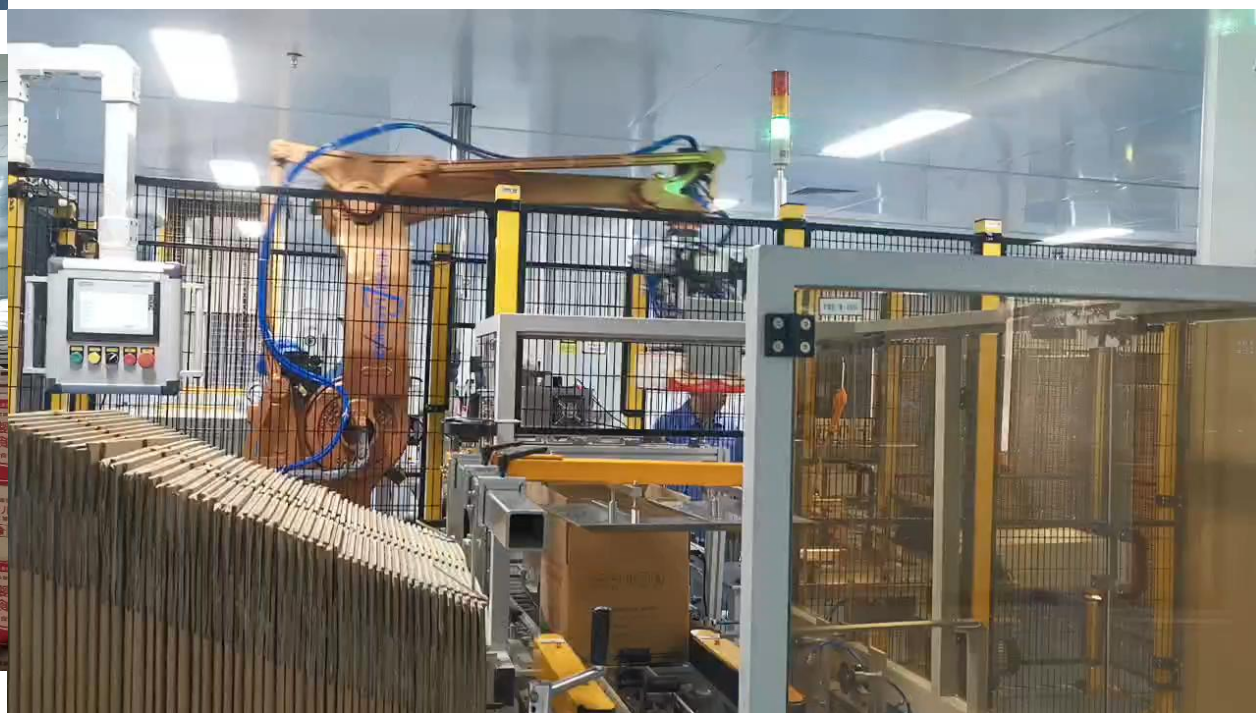
Automated mixing system for YingYangBao (YYB)



One code per box, laser-etched



Electronic Traceability System





- Quality control refers to the technical and managerial measures taken to meet quality requirements, including inspection, monitoring, analysis, and improvement.
- **Internal Quality Control:** Companies are encouraged to adopt a “farm-to-table” approach, from sourcing ingredients for YYB to their consumption.
- **External Quality Control:** Regulatory authorities (agricultural authorities, market regulation authorities) and project implementation agencies (relevant departments of the National Health Commission)



03

YYB Programme in China

Nutrition Improvement Programme for Children in Poor Areas of China

Period: 2012 - present

Expenditure: CNY 500 million (USD 73.9 million) / year

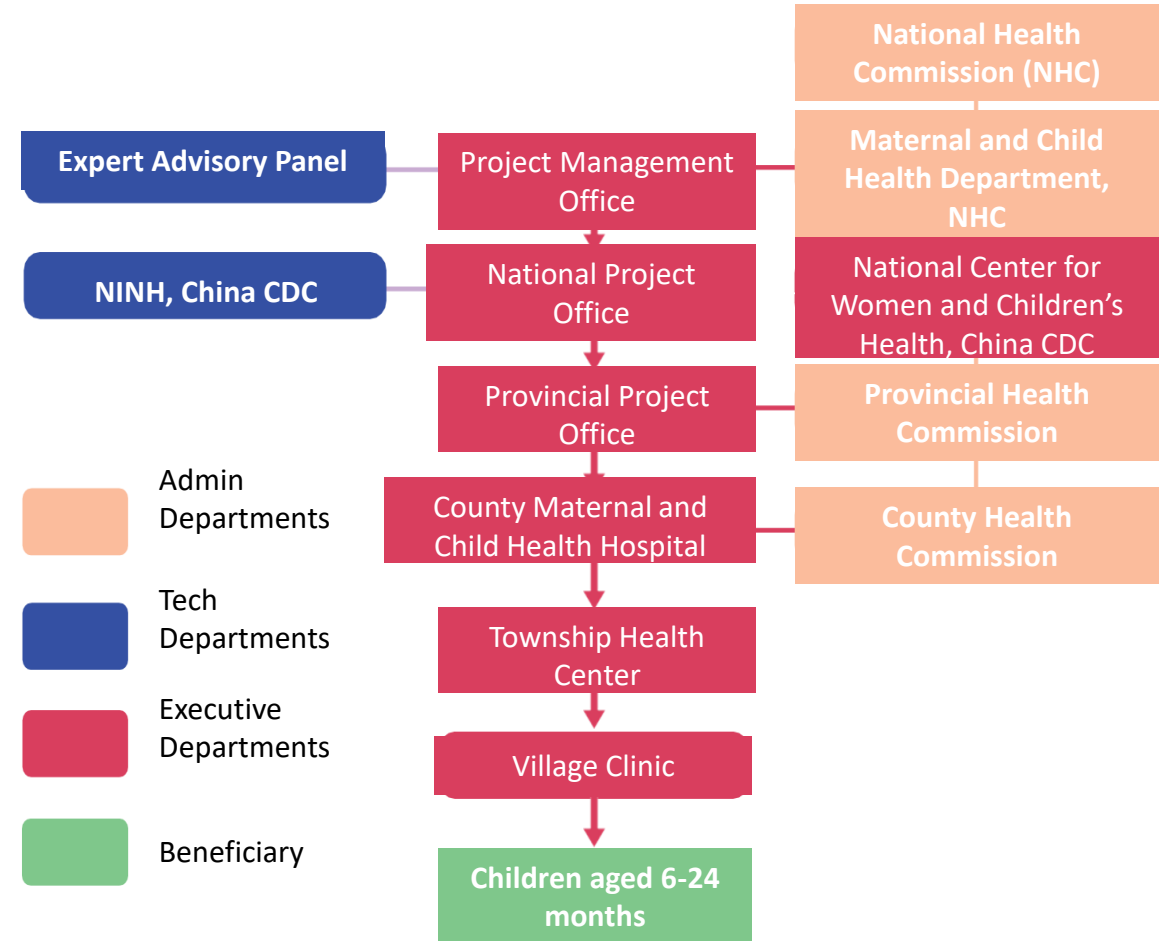
Area: Poor rural areas of China

Organization: MoH (NHC); ACWF

Program Goal: Supplying YYB for 6-24 -month-old population in poor areas, popularize knowledge and skills of scientific feeding for infants and young children, and improve the nutrition and health of children in poor areas.

Specific goal:

- Improve the awareness rate of YYB, the effective use rate of more than 60%
- Training coverage of more than 80%
- The coverage of health education for caregivers is over 80%
- The distribution rate of YYB is more than 90%
- The prevalence of anemia in 6–24-month-old decreased by 20% on the basis of baseline surveys



Nutrition Improvement Program for Children in Poor Areas in China

Specification of YYB

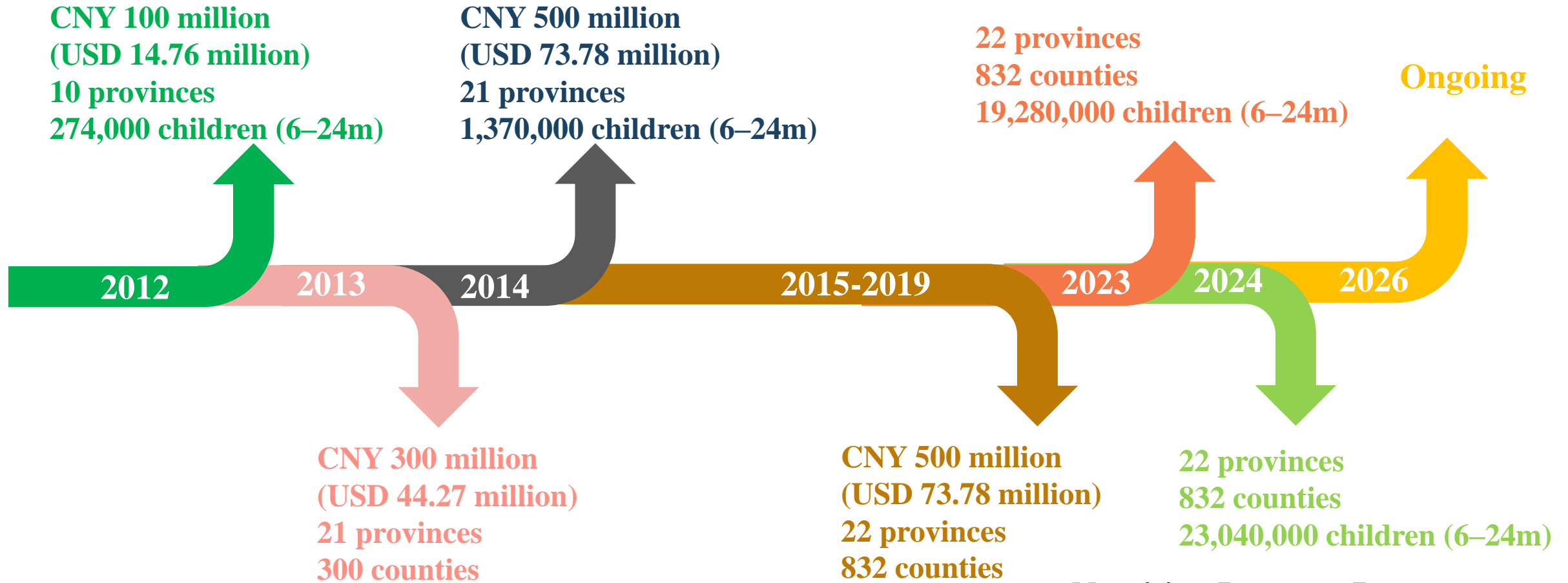
- Complied with GB 22570-2014
- Requirement:
 - 12g * 30 sachets/box
 - soybean-based. Use class I instant soybean powder in each YYB \geq 8.4g
 - 9 micronutrients



YYB cost: CNY 15 (USD 2.2) per 30 days
 * Exchange Rate: 1:6.77

Category	Daily 12 g (/ bag)	0.5-1y RNI s/AI s %	1-2y RNI s/AI s %
Protein (g)	≥ 3	15	12
calcium (mg)	200	80	33
iron(mg)	7.5	75	83
zinc (mg)	3.0	86	75
Vit A (μ g)	250	71	81
Vit D (μ g)	5.0	50	50
Vit B1(mg)	0.50	167	83
Vit B2(mg)	0.50	83	50
Folic acid(μ g)	75.0	127	80
Vit B12(μ g)	0.50	83	50

Nutrition Improvement Program for Children in Poor/Poverty-alleviated Areas in China



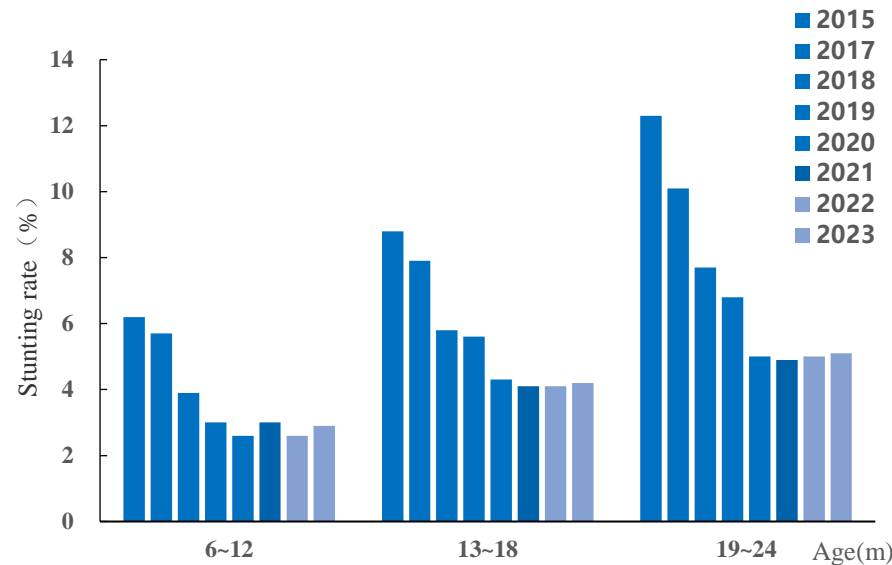
Nutrition Improve Program for Children in Poor Areas (2012-2020)

Nutrition Improve Program on Children in poverty-alleviated areas (2021-date)

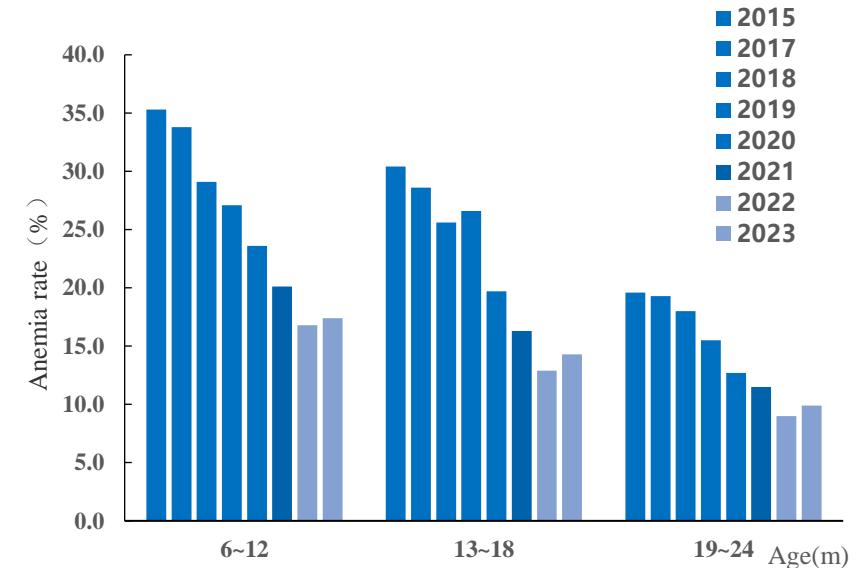
Nutrition Improvement Programme for Children in Poor/Poverty-alleviated in China

YYB Programme

- YYB used for home fortified
- 2012- present, total CNY 6.4 billion (USD 945.3 million) investment from government
- To 2023, total 19.28 million 6-24-m children in 832 counties were benefited from the YYB programme



Changes of stunting rate in infants of different months



Changes of anemia rate in infants of different months

Effect

- From 2012-2023, the anemia rate and stunting rate among children aged 6 to 24 months in the programme regions were decreased by 71.7% and 74.3%, respectively.

新华鲜报 | 近2000万名婴幼儿受益 中国“小营养包”带来“大健康”

2024-11-12 17:45:49
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改善近2000万名婴幼儿的营养状况，意义有多大？

含有小宝宝健康成长必需的蛋白质、维生素和铁等微量元素，一个12克左右的“小营养包”，发放10余年来，改善近2000万名婴幼儿的营养状况，见证了健康中国不凡的跨越。



自2012年起，我国在10个省（区、市）8个国家集中连片特殊困难地区的100个县实施儿童营养改善项目，中央财政支持免费向6至24月龄的婴幼儿每天发放一个营养包。此后，项目实施范围逐步扩大至22个省（区、市）832个县。

- Nearly 20 Million Infants and Young Children Benefit: China’s “Small Nutrition Packets” Promote “Great Health” — Xinhua Report (November 2024).
- Awarded as the *Best Practice* of the *Fifth Global Solicitation on Best Poverty Reduction Practices Campaign* organized by seven organizations including the International Poverty Reduction Center in China (IPRCC), FAO, WFP, and the World Bank.



第五届“全球减贫案例征集活动”优秀案例名单（排名不分先后）

第五届全球减贫案例征集活动入选案例名单（105个案例，排名不分先后）	
标题	提交机构
小小营养包 发挥大作用——国家卫生健康委员会实施贫困地区儿童营养改善项目	国家卫生健康委员会妇幼健康司
“六子登科”降“石魔”实现乡村绿色发展——云南省西畴县生态扶贫案例	生态环境部自然生态保护司
生物遗传资源获取与惠益分享减贫模式——广西壮族自治区罗汉果遗传资源获取与惠益分享减贫案例	广西壮族自治区环境保护科学研究院
交旅融合：中国乡村旅游一号公路——侗乡传统村落精品旅游环线助发展案例	贵州省交通运输厅
推进云上智农信息平台应用 助力脱贫地区乡村全面振兴——中央农业广播电视学校技术赋能案例	中央农业广播电视学校





Thank You

