

Supplementary Table 1 The information of the testing whole milk powder

Peculiarity	
General	Uniform milky yellow color, with the unique smell of the milk powder, dry without agglomeration and impurities
Nutrient content	Water:2.8g/100g; Protein:18.2g/100g; Fat:18.6g/100g; Lactose: 3.4g/100g
Sex hormone	Estrone: ND, Estradiol: ND, Progesterone: 40.6 ug/kg, Testosterone: ND

ND means that the hormone was not detected.

Supplementary Table 2 The contents of macronutrients and energy for uniform breakfast on the day of the intervention

	Breakfast	Recommended intake	Breakfast (%) *
Energy (kcal)	244.20	1900.0	12.85
Protein/g	8.16	45.0	18.13
Fat/g	1.29	25.0	5.16
Carbohydrate/g	51.22	57.5	89.08

* The percentage of breakfast calories or three major nutrients that are recommended for children in that age group.

Supplementary Table 3 The hormone levels in 3 whole milk powder and 1 skim milk powder

	W1	W2	W3	S
Estrone, ug/kg	ND	ND	ND	ND
Estradiol, ug/kg	ND	ND	ND	ND
Progesterone, ug/kg	19.7	40.5	40.6	ND
17A-hydroxyprogesterone, ug/kg	ND	ND	ND	ND
Testosterone, ug/kg	ND	ND	ND	ND

W1 to W3 are the whole milk and S means skim milk.

ND means that the hormone was not detected.

The detection limit of estrone, progesterone, 17A-hydroxyprogesterone and testosterone was 5 ug/kg respectively, and the detection limit of estradiol was 2 ug/kg.

Supplementary Table 4 Serum progesterone levels before and after sugar or meal ingestion in three prepuberty children (nmol/L)

	Sugar			Meal		
	0h	3h	variation	0h	3h	variation
Participant 1	2.30	1.15	1.15	2.05	0.85	1.20
Participant 2	1.78	0.88	0.90	1.50	0.49	1.01
Participant 3	1.95	0.60	1.35	2.61	0.75	1.86
Paired-t		8.739			5.240	
<i>P</i>		0.013			0.035	