NATURAL ANTIBIOTICS:
NEW BIOMARKERS OF CHILDHOOD OBESITY

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BACKGROUND

The innate immune system is one of the first lines of host defense against invading pathogens. Pro-inflammatory α-defensins (mainly DEFA1-3) and anti-inflammatory bacterial/permeability-increasing protein (BPI) are antimicrobial peptides predominantly produced by neutrophils which have been recently related to obesity, type 2 diabetes and cardiovascular risk.

OBJECTIVE AND HYPOTHESES

The aim of our study was to test whether α-defensins and BPI could be new markers of obesity and cardiovascular risk in children.

RESULTS

In the cross-sectional study, higher α-defensins concentrations were associated with a poorer cardiometabolic profile, showing positive associations with BMI, waist, SBP, cIMT, HOMA-IR and negative correlations with HMW adiponectin (all between r=0.191 and r=0.377; p<0.01 and p<0.0001). Conversely, higher plasma BPI concentrations were associated with a better cardiometabolic phenotype showing negative associations with BMI, waist, SBP, cIMT, HOMA-IR and positive correlations with HMW adiponectin (all between r=−0.124 and r=−0.329; p<0.05 and p<0.0001).

In the longitudinal study, plasma concentrations of α-defensins, but not of BPI, at age 7 were associated with BMI (β=0.189, p=0.002; model R²=0.847) and waist (β=0.241, p=0.001; model R²=0.754) at age ~10 years.

CONCLUSION

We suggest that the natural antibiotics α-defensins and BPI may be new markers of childhood obesity. Increased concentrations of α-defensins may predict weight gain and abdominal fat deposition in prepubertal children.