

Abstract

Fruits and Vegetables as Sources of Carotenoids in Complementary Feeding [†]

Daria Masztalerz-Kozubek, Monika A. Zielinska-Pukos * and Jadwiga Hamulka

Department of Human Nutrition, Institute of Human Nutrition Sciences, Warsaw University of Life Sciences (SGGW-WULS); daria_masztalerz_kozubek@sggw.edu.pl (D.M.-K.); jadwiga_hamulka@sggw.edu.pl (J.H.)

* Correspondence: monika_zielinska_pukos@sggw.edu.pl

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Abstract: Introduction: Fruits and vegetables are sources of numerous nutrients and bioactive compounds. One of them are carotenoids with antioxidant potential, particularly abundant in yellow-orange, red and dark green fruits and vegetables. Aim: The aims of this study were: (1) to investigate if fruits and vegetables rich in carotenoids are offered as first solids; (2) to assess if early nutritional factors, such as exclusive breastfeeding duration (EBF), timing (CFI) and method (CFM) of complementary feeding introduction may be associated with offering them. Methods: This internet-based study was conducted in 2016–2018 among 4104 mothers of children aged 12–36 months, recruited through social media in Poland. Mothers were asked about EBF, CFI, CFM as well as first 5–10 products that were given to their infants as first solids. Data on the consumption of the first products were collected using the qualitative method. Results: The majority of children was introduced to complementary feeding at 4–6 months (60.6%). The most often offered vegetables/fruits were carrot (89.8%), broccoli (54.0%) and pumpkin (39.7%), whereas avocado (3.1%), pepper (0.9%) and kale (0.02%) were rarely used as first weaning products. EBF, CFI and CFM were associated with offering pumpkin ($p < 0.001$; $p < 0.05$; $p < 0.001$), sweet potato ($p < 0.01$; $p < 0.001$; $p < 0.001$), tomato ($p < 0.01$; $p < 0.001$; $p < 0.001$), avocado ($p < 0.01$; $p < 0.05$; $p < 0.001$) and broccoli ($p < 0.001$) as first vegetables/fruits. In a group with CFI ≥ 7 months, sweet potato (13.7%), tomato (5.1%), avocado (4.0%) and broccoli (61.2%) were more often offered as first vegetables/fruits than in a group with CFI at 4–6 months (7.5%, 2.7%, 2.7%, 50.4%; respectively) or CFI < 4 months (3.9%, $p < 0.001$; 2.0%, $p < 0.001$; 0.0%, $p < 0.05$; 33.3%, $p < 0.001$; respectively). Conclusions: Early nutrition may be a factor associated with offering different foods during weaning. Carrot and broccoli were the most often offered solids. According to the literature carrot is the richest source of carotenoids, whereas broccoli has the highest antioxidant capacity.

Keywords: carotenoids; antioxidants; breastfeeding; complementary feeding

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References

1. USDA National Nutrient Database.
2. USDA Database for the Oxygen Radical Absorbance Capacity (ORAC) of Selected Foods, 2010.
3. Hamulka, J.; Wawrzyniak, A. *Lycopene and Lutein—Pro-Health Properties and Their Content in Products*; SGGW: Warsaw, Poland, 2004.