

OPPORTUNITIES FOR PRODUCT DEVELOPMENT AND MARKETING OF VEGETABLE PRODUCTS FOR YOUNG CHILDREN

This document is for food industry, particularly growers, manufacturers, suppliers and retailers. The purpose is to outline four evidence-informed strategies to inform product development and marketing of vegetable products for young children. Each strategy is explained and examples for action are provided.

Food industry plays a critical role in improving the nutritional intake of children in their first years of life. By creating vegetable options that contribute to a child's love of vegetables early in life, food industry can help establish future demand for vegetables in years to come.

Research shows that poor acceptance of vegetables is the key factor associated with children's low intake [1]. Using a robust scientific approach four strategies have been developed to support food industry in product development and marketing of infant vegetable products, to encourage children's liking of vegetables in early life. The appendix contains further information on the development of the advice.

The strategies are:

1. Variety

Help children to learn to like and eat vegetables by offering a variety of vegetables everyday as part of snacks and main meals. Only small amounts are needed to build liking.

3. Enable children to taste vegetable flavours

When children are learning to like vegetables, repeated exposure works. Pairing or masking vegetable flavours with fat, oil or fruit juice concentrates does not help children learn to like or accept vegetables above or beyond repeated and consistent offering.

2. Vegetables as first foods

When starting your baby on solid foods, offer them vegetables alongside iron-rich foods to help them to learn to like and eat vegetables. Offer vegetables first before fruits.

4. Presentation

Offering vegetables to children at multiple meals and snacks each day in ways that are attractive and easy to eat, helps children eat more vegetables. Vegetables can be fresh, frozen or tinned.

OPPORTUNITIES FOR PRODUCT DEVELOPMENT AND MARKETING

1. Variety

Help children to learn to like and eat vegetables by offering a variety of vegetables everyday as part of snacks and main meals.

Vegetables are commonly eaten by children at dinner, less so at other meals including breakfast, lunch, morning and afternoon snacks. Create more vegetable eating opportunities outside of dinner by providing a variety of vegetables in products designed to be eaten throughout the day.

Opportunities for product development:

- Single-serve, **ready to eat** lunch or snack vegetable products.
- Vegetable-based **breakfast** products.
- **Semi-prepared** vegetables or vegetable-based ingredients to make addition of vegetables to meals easy.
- Inclusion of less familiar vegetables (e.g. artichoke, radish) in vegetable mixes, ready-made meals or other meal components.



Opportunities for product marketing:

- Include a variety of vegetables in the **serving suggestion** (even if vegetables are not a characterising ingredient of the product).
 - For example, a pasta bake could be served with a side of roast vegetables.
- Provide **recipes** that encourage the addition of vegetables or demonstrate the versatility of your product through the addition of vegetables. Provide multiple suggestions of different vegetables that would fit with a recipe (this accounts for personal tastes and seasonal availability).
 - For example, recipes promoting a wholegrain flat bread could include a breakfast burrito recipe with onion, tomato, spinach and mushrooms; or a lunch wrap filled with grated carrot, red capsicum, lettuce and hummus.



Plant-based nutrition and snacking is trending, which means that the time is ripe to consider how your product range can include a variety of different vegetables across all meal types and categories. This will also help children to become more familiar and learn to like and love vegetables.

2. Vegetables as first foods

When starting your baby on solid foods, offer them vegetables alongside iron-rich foods to help them to learn to like and eat vegetables. Offer vegetables first before fruits.

To help children to learn to love and like vegetables it is important to introduce infants to a variety of vegetables before introducing fruits. Care needs to be taken when transitioning to solid foods, to ensure that baby's iron intake is adequate. Not getting enough iron can have implications on baby's brain development.

This advice supports the Australian Infant Feeding Guidelines [2] which recommend:

To prevent iron deficiency, iron-containing nutritious foods should be included in the first foods. Iron containing foods include iron-fortified cereals, pureed meat and poultry dishes. Cooked plain tofu and legumes/beans are also sources of iron.

Foods can be introduced in any order, provided iron-rich nutritious foods are included and the texture is suitable for the infant's stage of development.

Opportunities for product development:

- To support exposure to a range of vegetables and their characterising flavours, develop a greater variety of age (and texture) appropriate **single vegetable** products. This includes single vegetable products such as spinach or green beans, and perhaps less common vegetables such as artichoke or parsnip.
- Include vegetables that are **sources of iron** such as green peas, broad beans, kidney beans, spinach and other leafy greens, in infant food products.



Opportunities for product marketing:

- Include iron-rich foods in the **serving suggestion** with vegetable products, or conversely, include vegetables in the serving suggestion of iron-rich foods. Educate the target audience on the importance of serving vegetables alongside iron-rich foods on your website or marketing collateral.
- **Promote** all single vegetable products as suitable first-foods. This includes products that are not just made for infants but any single vegetable product – frozen, canned or fresh.
 - For example, cauliflower rice or vegetable mash could be promoted in the infant foods section of a retail catalogue – this widens the market for a product without any need for changing packaging or re-branding.
- Provide relevant evidence-based **communications** about vegetables or your vegetable products to target markets through social media, eDMs and your website. This not only provides added value to the consumer but helps continue to drive demand for vegetables.
 - For inspiration - Veggycation®, veggycation.com.au – a website where you can learn about the nutrition and health benefits of Australian grown vegetables, including information on optimum cooking methods, preparation and storage.

3. Enable children to taste vegetable flavours

When children are learning to like vegetables, repeated exposure works. Pairing or masking vegetable flavours with fat, oil or fruit juice concentrates does not help children learn to like or accept vegetables above or beyond repeated and consistent offering.

Vegetables have a wonderfully wide range of unique and interesting flavours. Children learn to like and enjoy vegetables by consistently and repeatedly tasting these flavours and it is not necessary to pair or mask them with fat, oil or fruit juice concentrate. Also, only a small amount each time is needed to gradually build acceptance.

Opportunities for product development:

- **Reduce use** of fruit juice concentrates, fruit paste and dried fruit powder as sweetener in infant vegetable products. These do not help children to develop the taste for vegetables.
- If a sweet flavour profile is desired, a better option is to use vegetables with a sweet profile such as corn, beetroot, pumpkin, carrot or sweet potato instead of fruit concentrates.
- Remember that **food processes** such as high pressure processing (HPP), or pasteurisation for infant vegetable products may remove or reduce the need for other added ingredients for shelf-life extending purposes.
- There is opportunity to produce a greater variety of **single vegetable products** targeted to young children. These can be fresh, frozen or tinned.



Opportunities for product marketing:

- Use packaging, website and marketing collateral to advise and **educate consumers**. If a product contains no added fat, oil or fruit juice concentrate use packaging to acknowledge and promote this fact. Website content can detail how children can learn to enjoy the flavour of vegetables without the addition of other flavours, and the benefit of this.

Parents and care-givers are advised to limit added sugar in foods provided to infants and are becoming more savvy with reading food labels. There is high consumer demand for infant suitable products that do not contain excessive sugar and therefore a huge opportunity for product developers. This will help children develop the taste for vegetables without added flavours helping them to continue to eat and love vegetables throughout their whole lives.

4. Presentation

Offering vegetables to children at multiple meals and snacks each day in ways that are attractive and easy to eat, helps children eat more vegetables. Vegetables can be fresh, frozen or tinned.

Vegetables are naturally colourful and interesting to look at and emphasising these qualities makes them appetising and appealing to consumers.

Opportunities for product development:

- **Colourful vegetable** products prepared into age-appropriate pieces for snacking and to easily add to meals. For some inspiration, see New opportunities for developing vegetable products for children – report summary (Industry & Growers: Tools & resources (vegkit.com.au)).
- Include children in your **testing panel**, to see if the product concept, including name, format and presentation appeals to them.

Opportunities for product marketing:

- **Images** of vegetables provide colour to packaging increasing the appeal to children. Even if vegetables are not a characterising ingredient of a product you can feature vegetables as part of a serving suggestion.
- Exciting and flavourful **product descriptions** can help improve the appeal of vegetable products. Though health messaging can positively influence a caregiver’s decision, the use of sensory language (tasty, flavoursome etc.) can increase the appeal of vegetables for children.
- For vegetable-containing products using cartoon characters or mascots on the packaging to generate a sense of fun and appeal to children.



WHAT IS THE ISSUE?

Vegetables are essential for children’s healthy growth and development, yet most children fail to eat the recommended amounts. Only 6% of Australian children aged 2-17 years of age eat the recommended amount of vegetables [3]. Low vegetable intake has implications for health across the life course, including an increased risk of chronic diseases and overweight and obesity [4-7].

The first years of life are critical in developing food preferences, with habits, likes and dislikes established early [8-10]. It is crucial that the behaviour of eating vegetables is fostered in young children [11,12] to support healthy growth, development and lifelong dietary habits.

Disliking vegetables is a key factor associated with children’s low intake. Children’s perception of foods is different to adults and they are more sensitive to the bitter taste of vegetables – a driver of dislike [13]. However, there are many strategies that can be used to help children to learn to enjoy eating vegetables.



Only 6% of Australian children aged 2-17 years of age eat the recommended amount of vegetables.



Poor acceptance of vegetables is a key reason for low intake.



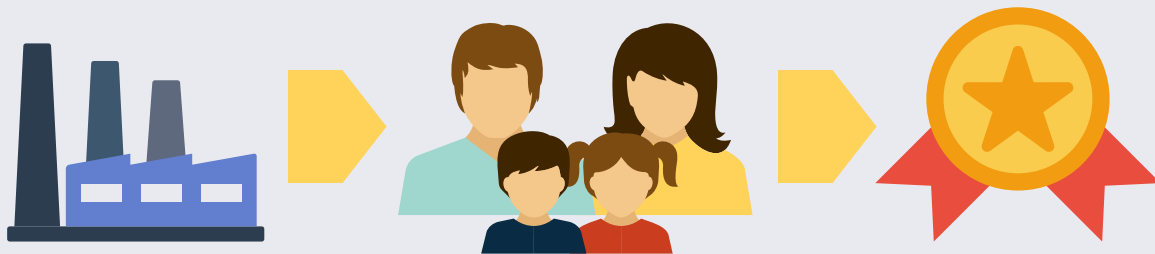
The first years of a child's life are critical in developing a liking of vegetables.



WHAT FOOD INDUSTRY CAN DO TO SUPPORT YOUNG CHILDREN'S VEGETABLE LIKING AND OPTIMISE FUTURE DEMAND

Food growers, manufacturers suppliers and retailers are ideally placed to encourage liking and increase intake of vegetables in young children by providing more vegetables in products as well as helping to improve children's familiarity and exposure to vegetables through marketing and promotional activities. By implementing these strategies to improve vegetable intake in young children, food industry will optimise future demand for vegetables.

Figure 2: The role and benefit to food industry in encouraging children to eat and enjoy vegetables



Food Industry

Implement evidence-based strategies to increase the number of market offerings that facilitate children's liking of vegetables.

Carers of children

Provide a greater variety of vegetable products to children that set them up to like vegetables throughout life.

Benefits

Greater demand for vegetable products, with benefits to vegetable manufacturers, retailers and growers.

Public health and economic benefits of increased vegetable intake.

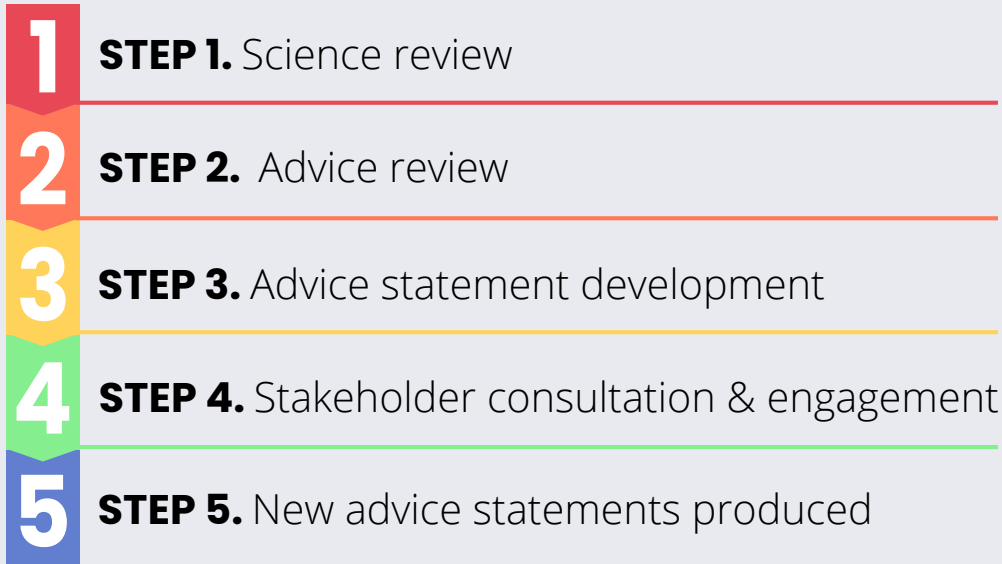
Research shows that previous initiatives have achieved up to a 30% increase in children's vegetable intake which, based on current consumption patterns, equates to about half a serve per child per day.

For further information visit VegKIT.com.au

APPENDIX – DEVELOPMENT OF ADVICE

To inform development of the new advice, a comprehensive approach was undertaken to understand the evidence and current guidelines related to maternal, infant and childhood vegetable feeding and intake. This approach involved the following steps:

Figure 1: Steps to developing advice statements to support children’s liking of vegetables



Step 1: Science Review

A review was conducted to determine the effectiveness of sensory and behavioural strategies on increasing young children’s vegetable acceptance [14-26].

Step 2: Advice Review

Current Australian guideline and recommendation documents encouraging children’s vegetable intake in the early years were analysed intake and opportunities to improve advice to foster young children’s liking of vegetables were collated [27-43].

Step 3: Advice Statement Development

Science review findings were extracted and mapped against a framework of factors influencing vegetable liking in the first years of life.

Step 4: Stakeholder Consultation and Engagement

A group of experts were consulted across maternal and child health and development, psychology, sensory science, education and nutrition.

Step 5: Advice Statements Produced

Based on the above steps, four advice strategies to support children’s liking of vegetables in the early years of life were produced and identified as relevant to food industry.

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