

# CALIFORNIA WALNUTS

AND

## *Chocolate Confectionery*




A technical guide for Confectioners



Confectioners have long used walnuts in cakes, cake fillings and many other baked and hand prepared confections but more recently confectioners are beginning to realise the benefits of adding this nutritional ingredient to chocolate confectionery.





This technical guide provides an overview of walnuts' key attributes as well as giving an insight into recent research on the shelf life of dark and milk chocolate confectionery containing walnuts.

# Confectionery **UK**



The confectionery category is undergoing an identity crisis. On one hand, many consumers are craving premium and nostalgic treats to indulge in both for comfort and as a reward. Conversely, a growing consumer population is seeking clean label, all-natural chocolate confections that they can feel good about eating. Often these consumers are the same person!



To support this theory, research conducted by Innova also concluded that 59% of European Consumers think that chocolate with multiple textures (from nuts and dried fruit etc) and flavours are more premium. The research also deduced that 52% of global millennials spend their money on sweets and snacks before clothes, eating out and beauty products<sup>28</sup>

**With a £3.7Bn turnover and 1.2% CAGR between 2020 – 2025 chocolate confectionery in the UK is steady and growing.** Chocolate confectionery represents a dynamic and innovative segment following 1100 new innovations in 2020 alone according to Barry Callebaut's 'Top Chocolate Trends 2021 and beyond':

Barry Callebaut identified 4 core consumer needs in this category during 2021 and beyond:

'Indulgent Moments'

'Good for me'

'Chocolate I Trust'

'Adopting New Forms'

Walnuts can satisfy all the above criteria and they also provide chocolate confectioners with a solution that allows consumers to enjoy indulgent moments with nutritional benefits. In a survey conducted in the US in 2019, taste was cited as the #1 reason for consuming walnuts. In addition, **90% of those consumers questioned recognize walnuts as a nutritious food** and 78% said that the health benefits offered by walnuts positively impacted their purchase decision.



\*Sources Innova, BC proprietary Qualtrics quantitative research – June 2019 -UK, GER, FR, SP, IT, SE Foresight Factory. 5,088 online respondents aged 12-19, global 2020 February.

# Why **CALIFORNIA** Walnuts ?



## TASTE

The dual nature of the walnut — its sharp - flavoured skins, crunch, and a rich, creamy interior — enables it to play two roles in the flavour pairing game. Walnuts enhance sweeter confections but at the same time lighten up citrus fruit flavours and savoury notes. This versatility specifically enhances the flavour of chocolate confections. In a Davis Sensory Institute study conducted in the US, dark chocolate was the preferred flavour pairing with walnuts among sensory panel participants.

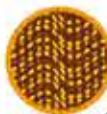


## SIZE AND COLOUR

Walnuts are available in sizes ranging from whole pieces to finely diced, allowing confectioners to tailor the perfect mouthfeel in products using walnuts. Walnuts also are available in light and light amber colours, with light walnuts carrying mild flavours and earthy notes, and light amber walnuts providing a more robust and slightly sweet finish.







## TEXTURE

Consistent California Walnuts deliver a reliable product year after year and can be processed to varying specifications and sizes.



## THE POWER OF 3

Walnuts are the only nut with an excellent source of plant-based omega-3 ALA (alpha-linolenic acid) at 2.7g/30g. The potential benefits of omega-3 ALA overlap significantly with the top concerns of consumers, who worry about retaining cardiovascular health, mental sharpness, and memory. In addition to valuable plant-based omega-3 ALA, 30 grams of walnuts also contain:

- 4.4g of protein
- 1.4g of fibre
- A good source of magnesium (48mg)



# Using walnuts in **CHOCOLATE CONFECTIONS**



**Walnut's present confectioners with unlimited potential for new creations. Before developing a new confection with a higher nutritional profile, follow these general guidelines and best practices...**



## PROPER STORAGE

Walnut shelf life can be significantly impacted by temperature, light and humidity. When stored in a dark place in airtight containers, they can easily be kept for up to one year:

- **Use within 6 months when stored at refrigerated temperatures**
- **Use within 12 months when stored at frozen temperatures**
- **55% to 65% relative humidity**



## OXIDATION PREVENTION

Walnuts have a unique fat composition that includes polyunsaturated fats and plant-based omega-3 fatty acids. These good fats make walnuts a nutritious food but also make them susceptible to oxidation. Working walnuts into chocolate or other substances that contain fat can lower the risk of oxidation by restricting their contact to air, improving walnuts' shelf life. Additionally, if a chopped, diced or ground walnut is needed for an application, it is best to wait until just before use to cut the walnuts to minimise their air exposure, ensuring a fresher ingredient.



## COATING/CARAMELIZING

To further delay or prevent oxidation, walnuts can be caramelised or coated with any type of syrup or oil to provide a barrier between the walnut and oxygen. This is especially beneficial with confections as these coatings can be used to provide a more dynamic flavour profile.



## HEATING AND ROASTING

Roasting or other similar heating processes can have an impact on walnuts' moisture content, flavour, colour and in some cases their microbiological profile. To lower the risk of off -notes or other quality flaws, temperatures should not exceed 293°F/145°C, and temperatures below 257°F/125°C are more advisable. Gentle handling at lower temperatures and a prolonged resting period have a marked positive effect on walnuts' taste and shelf life.

# Shelf-life RESEARCH

The California Walnut Commission recently conducted shelf-life research on walnut use in dark and milk chocolate applications, looking specifically at flavour stability and the occurrence of bloom. Chocolate bloom is the recrystallization of free cocoa butter from the chocolate, which comes to the surface of the bar and forms a white patch or streaks on the chocolate. While bloomed chocolate is safe to eat, it's undesirable to consumers principally due to its appearance. This type of oil migration from nuts into chocolate products pose challenges to confectioners regardless of the nut being used. This is especially true for commercial products that require a shelf life beyond three months.



## MILK CHOCOLATE RESULTS

Walnut usage in milk chocolate showed great stability in visual and sensory panels for up to six months, with no signs of bloom for the entire length of the 12-month study. After six months, the presence of off - flavours was detected.

## DARK CHOCOLATE RESULTS

In dark chocolate shelf-life studies with walnuts, the similar off - flavours found in milk chocolate were present in dark chocolate after six months.

However, the occurrence of bloom triggered a new phase of research aimed at seeking solutions to reduce or eliminate the occurrence of bloom in dark chocolate products with walnuts while still staying within the US Standards of Identity for Dark Chocolate.

Because milk chocolate did not show any bloom, the addition of whole milk fat to dark chocolate was tested to eliminate bloom.

As part of the research, dark chocolate bars (60% dark chocolate with no milk fat addition) were obtained from a commercial chocolate manufacturer and whole milk fat was added at two levels. Chunks of walnuts were added at the rate of about 30% of the formulation, and bars were cast and aged under constant temperature at 70°F [Test] and at 0°F [Control]; 21°C [Test] to -18°C [Control]. At levels of either 2.5% or 5% whole milk fat, the dark chocolate applications with walnuts achieved a six-month shelf life without any occurrence of bloom. This preliminary research was a first step in understanding the shelf life of chocolate products with walnuts. The California Walnut Commission is committed to continue researching this topic and will update this technical guide as new information becomes available.





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