WALNUTS
IN CHOCOLATE CONFECTIONS
Walnut usage in the candy industry is growing as confectioners realize the flavor, texture and nutritious properties the ingredient delivers in products designed for indulgence or confections positioned as better-for-you treats. This technical sheet provides an overview of walnuts’ key attributes, details why the ingredient is trending and provides insight into recently conducted research on the shelf life of dark and milk chocolate confections with walnuts.

WHAT’S TRENDING

The confectionery category is undergoing an identity crisis. On one side, 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. And sometimes, these consumers are the same person!

This dichotomy has puzzled many confectioners as they seek to develop new products that satisfy a broad base. Walnuts provide candymakers with a solution to have it both ways. In a 2019 consumer survey, taste was cited as the #1 reason for consuming walnuts. In addition, 90% of consumers recognize walnuts as a nutritious food and 78% said the health benefits positively impacted their purchase decision. With an ingredient like walnuts, confectioners don’t have to choose between health and indulgence — they can have both!

WALNUT ATTRIBUTES IN CONFECTIONERY PRODUCTS

TASTE

The dual nature of the walnut — its sharp-flavored skins and a rich interior — enables it to play two roles in the flavor pairing game. The bitter notes allow walnuts to enhance sweeter confections but at the same time lighten up citrus fruit flavors and savory notes. This versatility specifically enhances the flavor of chocolate confections. In a Davis Sensory Institute study, dark chocolate was the preferred flavor pairing with walnuts among sensory panel participants.

PIECE SIZE AND COLOR

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 colors, with light walnuts carrying mild flavors and earthy notes, and light amber walnuts providing a more robust and slightly sweet finish.

TEXTURE

Walnuts have the perfect bite, neither too hard nor too soft. They provide a crunch but also are pliable, making them perfect to simply enrobe with chocolate or use as an inclusion in a chocolate bar, toffee, caramel or nougat.

NUTRITIONAL PROPERTIES

Walnuts are the only nut with an excellent source of plant-based omega-3 ALA (alpha-linolenic acid) at 2.5g/oz. 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, one ounce of walnuts also contains:

- 4g of protein
- 2g of fiber
- An excellent source of magnesium (45mg)

ON THE MARKET

REISHI WALNUT CHOCOLATE BAR, VOSGES CHOCOLATE
This unique offering from Vosges relies on roasted walnuts to provide flavor, texture and familiarity to a product that contains reishi mushrooms and bittersweet 72% cacao dark chocolate.

AWESOME WALNUT SQUARE BARS, SEE’S CANDIES
These indulgent confections use the crunch of walnuts to complement a buttery caramel and vanilla flavor. Dark chocolate enrobes the treat and provides the perfect flavor balance.

DARK CHOCOLATE WALNUT BAR, STEP ONE FOODS
This bar is formulated for consumers who want it all: health and indulgence. This snack bar combines nutty chunks of walnut with 72% cacao dark chocolate for a sweet, but not too sweet, treat.

USING WALNUTS IN CHOCOLATE CONFECTIONS
Walnuts present confectioners with unlimited potential for new creations. Before developing a new confection, follow these general guidelines and best practices for using walnuts in chocolate confections.

PROPER STORAGE
Walnut shelf life can be 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 12 months when stored at refrigerated temperatures
- Use within 24 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 the products’ 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 minimize their air exposure, ensuring a fresher ingredient.

COATING/CARAMELIZING
To further delay or prevent oxidation, walnuts can be caramelized 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 flavor profile.
HEATING

Roasting or other similar heating processes can have an impact on walnuts’ moisture content, flavor, color 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 flavor 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. This type of oil migration from nuts into chocolate products poses 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-flavors was detected.

DARK CHOCOLATE RESULTS

In dark chocolate shelf-life studies with walnuts, the similar off-flavors found in milk chocolate were present in dark chocolate after six months. However, the occurrence of bloom triggered a new phase of research to seek solutions to remediate 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 as a means 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 sheet as new information becomes available.

To schedule a meeting or ideation session, please contact: Keith Seiz at kseiz@walnuts.org

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