ISSN: 2775-5118 VOL.3 NO.10 (2024) I.F. 9.1

CONFECTIONERY PRODUCTION TECHNOLOGY

Gulistan state university

3rd grade student

Abdurazzoqova Muxlisa Muxtor qizi

abdurazzoqovamuxlisa0@gmail.com

Abstract: *The confectionery industry has expanded remarkably over the past century, with innovations in production technologies, ingredients, and marketing strategies. Confectionery products are divided into several categories: chocolate, sugar-based candies, gum, and baked sweets. Each of these product types has unique production processes and requires specific technologies for quality assurance, efficiency, and scalability.*

Keywords: *technology, production, sugar, quality, tree, quality, product, ingredients, innovations, chocolate, cocoa, jellies, sweets.*

Introduction: *Types of Confectionery Products*

Confectionery is broadly classified into chocolate, sugar-based candies, and baked sweets.

Chocolate Confectionery: Chocolate is made from cocoa beans, and the production process involves fermentation, drying, roasting, grinding, and conching. Conching, a process in which chocolate is continuously mixed and aerated, improves its texture and flavor.

Sugar-Based Confectionery: This includes hard candies, jellies, marshmallows, and caramels. These products are primarily made by boiling sugar with water and other ingredients, often requiring temperature control to achieve the desired texture.

Types of Confectionery Products

Confectionery is broadly classified into chocolate, sugar-based candies, and baked sweets.

Chocolate Confectionery: Chocolate is made from cocoa beans, and the production process involves fermentation, drying, roasting, grinding, and *conching*. Conching, a process in which chocolate is continuously mixed and aerated, improves its texture and flavor.

Sugar-Based Confectionery: This includes hard candies, jellies, marshmallows, and caramels. These products are primarily made by boiling sugar with water and other ingredients, often requiring temperature control to achieve the desired texture.

Gum and Jelly-Based Confectionery: This category includes gummies, jellies, and marshmallow products. Gelatin, agar-agar, and pectin are commonly used gelling agents.

ISSN: 2775-5118 VOL.3 NO.10 (2024) I.F. 9.1

Baked Confectionery: Products like cookies, cakes, and pastries fall into this category, requiring baking as the primary method of cooking.

2. Ingredients and Their Functions

Ingredients play a crucial role in determining the quality and characteristics of confectionery products.

Sugar: The main ingredient, sugar provides sweetness, structure, and preservation. It also affects the texture by controlling moisture content.

Cocoa: Cocoa beans are used in chocolate production, providing flavor, color, and certain health benefits.

Milk and Milk Products: Milk solids, butter, and cream add creaminess and softness, commonly used in chocolates and caramels.

Stabilizers and Emulsifiers: Ingredients like lecithin are used in chocolate to stabilize and blend the fat and sugar, enhancing texture and preventing separation.

Gelling Agents: Gelatin, pectin, and agar-agar are added to certain products to provide chewiness, particularly in gummy candies.

3. Confectionery Production Processes

Production processes vary depending on the type of confectionery product being made. However, there are some common stages across most types.

a. Mixing

The mixing process blends ingredients to form a homogenous mixture. Specialized mixers like planetary mixers, ribbon blenders, and continuous mixers are used depending on the type of product and batch size.

b. Cooking

Cooking or boiling is a critical step in the production of sugar-based confectionery. The sugar and water mixture is boiled to specific temperatures depending on the desired texture. For example:

Hard Candy: Cooked to 160°C (320°F) to achieve a hard texture.

Chewy Candy: Boiled to lower temperatures, around 120°C (248°F), to retain moisture and create a chewy consistency.

c. Shaping and Molding

Once the mixture is cooked, it is shaped or molded into the desired form. Molding techniques can include depositing, cutting, and extrusion. Chocolate and gummy candies are often poured into molds, while hard candies may be cut or pressed into shape.

ISSN: 2775-5118 VOL.3 NO.10 (2024) I.F. 9.1

d. Cooling and Setting

Proper cooling is necessary to solidify the product. Products like chocolate require tempering to stabilize the cocoa butter, which involves cooling and reheating at specific temperatures to create a glossy finish and snap.

e. Packaging

Packaging protects the product from moisture, contamination, and physical damage. Modern packaging machinery provides airtight sealing, which extends shelf life.

4. Key Technological Innovations in Confectionery Production

Recent innovations have transformed the confectionery industry, focusing on energy efficiency, automation, and product quality.

Robotics and Automation: Automated systems have improved efficiency and reduced labor costs. Robots are used in molding, packaging, and quality control.

Temperature Control Systems: Advanced temperature control systems ensure that cooking, cooling, and tempering processes are precisely maintained, resulting in consistent quality.

Quality Control Technologies: Modern confectionery factories use vision systems to detect defects, foreign particles, and color inconsistencies.

Sustainable Practices: Manufacturers are increasingly using sustainable raw materials, reducing waste, and implementing energy-saving technologies to minimize their environmental footprint.

5. Health and Nutritional Aspects

There is a growing demand for healthier confectionery products, leading manufacturers to reduce sugar content, replace artificial additives, and introduce more natural ingredients. Innovations like high-fiber gummies, reduced-calorie chocolates, and natural colorings have become popular.

Conclusion

The confectionery production industry combines traditional techniques with modern technology to meet consumer demand and ensure high-quality products. As the industry advances, producers focus on efficiency, quality, and sustainability while exploring new ingredients and technologies to cater to health-conscious consumers.

ISSN: 2775-5118 VOL.3 NO.10 (2024) I.F. 9.1

References:

1. Beckett, S. T. (2008). Industrial Chocolate Manufacture and Use. Wiley-Blackwell.
2. Edwards, W. P. (2000). Science of Sugar Confectionery. Royal Society of Chemistry.
3. Hartel, R. W., von Elbe, J. H., & Hofberger, R. (2018). Confectionery Science and Technology. Springer International Publishing.
4. Jackson, E., & Forster, A. (2009). Handbook of Sugar Refining: A Manual for the Design and Operation of Sugar Refining Facilities. Wiley.
5. Minifie, B. W. (1989). Chocolate, Cocoa and Confectionery: Science and Technology. Springer US.
6. Wollgast, J., & Anklam, E. (2000). Review on polyphenols in Theobroma cacao: Changes in composition during the manufacture of chocolate and methodology for identification and quantification. Food Research International, 33(6), 423-447.
7. Afoakwa, E. O. (2010). Chocolate Science and Technology. Wiley-Blackwell.
8. Renn, D. (Ed.). (1997). Gums and Stabilizers for the Food Industry 9. IRL Press.