

DETERMINATION OF HONEY QUALITY INDICATORS BASED ON SANITARY REQUIREMENTS.

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ANNOTATION:

This article discusses the assessment of honey quality indicators in accordance with sanitary standards. Honey is one of the most important natural products for human health. Its purity, natural composition, and compliance with hygiene standards play a crucial role in maintaining overall well-being. Contaminated or improperly stored honey can lead to various health issues. Therefore, veterinary and sanitary specialists play a vital role in ensuring honey's safety and quality. They carry out laboratory tests, evaluate the composition, and determine whether the product is suitable for consumption. The article provides an overview of the importance of these specialists and their role in honey quality assessment.

Keywords: Honey, quality indicators, sanitary requirements, purity, veterinary-sanitary expertise, hygiene, product safety, honey composition, laboratory testing, human health.

АННОТАЦИЯ:

В данной статье освещается вопрос определения показателей качества мёда на основе санитарных требований. Мёд является одним из важнейших натуральных продуктов для здоровья человека. Его чистота, натуральный состав и соответствие гигиеническим нормам играют важную роль в сохранении здоровья. Загрязнённый или неправильно хранимый мёд может привести к различным заболеваниям. В связи с этим особую роль играют специалисты ветеринарно-санитарной экспертизы, которые проводят лабораторные исследования, оценивают состав продукта и

определяют его пригодность к употреблению. В статье представлена общая информация о значении этих специалистов и их роли в определении показателем качества мёда.

Ключевые слова: Мёд, Показатель качества, санитарные требования, чистота, ветеринарно-санитарная экспертиза гигиены, Безопасность продукта, состав мёда, лабораторные исследования здоровье человека.

Introduction:

Honey is a natural sweet substance produced by bees from the nectar of plants and flowers, which they collect and convert. Today, beekeeping is an important agricultural sector and a significant source of income in many regions of our country. The chemical composition and nutritional value of honey are diverse and largely depend on climatic conditions, season, the type of plant nectar collected, and other factors. It has been identified that honey contains about 300 different substances, with approximately 100 present in all types. The primary component of honey is sugars, which can constitute up to 80% of its content.

Natural honey is classified by botanical origin into floral, honeydew, and mixed types. Floral honey is produced from flower nectar and is further divided into monofloral (from a single plant species) and polyfloral (from multiple species). Honeydew honey is collected from sweet secretions found on plant or tree surfaces, especially when nectar is unavailable. It generally has a lower nutritional and biological value than floral honey and tends to be light to dark amber with a bitter or sour taste. There are also artificial types of honey, such as sugar honey, vitamin-enriched honey, and synthetic honey. Sugar honey is produced by bees from sugar syrup. Vitamin-enriched honey is made by feeding bees syrup mixed with vitamin-rich natural juices. Synthetic honey is produced by boiling and thickening sugar syrup with the addition of organic acids (e.g., lactic, citric, or tartaric acids) and flavor essences. These types of honey have significantly reduced medicinal properties compared to natural honey. Honey is not only beneficial for consumption but

also possesses numerous medicinal properties. However, ensuring its safety is crucial, as failure to meet sanitary requirements can result in microbiological or chemical contamination, potentially harming human health. Evaluating honey quality and compliance with hygiene standards is therefore essential. In Uzbekistan, honey production is growing within the agriculture and beekeeping sector. However, this growth also increases the demand for reliable quality and safety controls. This article offers practical recommendations for producers to enhance quality assurance and medical safety.

Honey Examination Methods. Determining whether honey is natural or adulterated through expert evaluation is of practical importance. There are different types of honey assessments, including commodity and veterinary-sanitary examinations:

Commodity Examination. This type of examination determines whether the honey meets approved regulatory requirements. It evaluates organoleptic and physicochemical indicators. Natural honey must comply with the requirements of State Standard 19792-87.

Veterinary-Sanitary Requirements for Honey Sold in Markets:

1. Containers used for storing and transporting honey must meet sanitary-hygienic standards.
2. Honey is accepted for examination only if accompanied by a veterinary certificate (Form F-4 or F-2) and a veterinary-sanitary passport for the beehives.
3. Honey is considered unsuitable for consumption in the following cases (details should be listed but were missing in the original).

The results of the veterinary-sanitary examination are recorded in a special laboratory journal. Individuals who violate veterinary regulations may face disciplinary, administrative, or criminal penalties under the Law of the Republic of Uzbekistan “On Veterinary Medicine.”

Materials and Methods: Samples of market-sold honey are collected from wooden barrels, flasks, stainless steel, glass, or enamel-coated containers. A composite sample is

created by taking honey from different parts of each container. Crystallized honey is sampled with a special scoop (“shup”), while liquid honey must be thoroughly mixed before sampling.

According to veterinary-sanitary guidelines, 100 g samples are collected from each batch, or 200 g if water content is being analyzed.

Organoleptic Testing : This testing helps determine if honey is made from flower nectar or plant sap and whether it has been adulterated. Honey from plant sap is usually clear to dark in color, has a faint or unpleasant odor, and a bitter taste.

The following characteristics are assessed:

Color: Influenced by plant pigments, origin, collection time, and processing conditions. It may range from clear-white, yellow, cotton-colored, raspberry, to brown shades.

Aroma: Assessed before and during tasting. If weak or absent, the sample is heated in a water bath at 40–45 °C for 10 minutes and re-evaluated.

Taste: Natural honey should have a pleasant, sweet flavor. Sour or bitter honey is not permitted for sale.

Consistency: Fresh honey remains liquid for 3–10 weeks before crystallizing. A persistently liquid state may indicate high water content or incomplete maturation

Detection of Adulterated Honey:

In practice, flower honey is sometimes adulterated with sugar, syrup, flour, or starch.

Sugar Addition: Uniform crystallization may indicate sugar content. Under a microscope, sugar crystals appear irregular, while natural honey crystals are needle- or star-shaped.

Toxicity Testing: 1 ml of a 50% honey solution is injected under the skin of white mice. If 75% of the mice die within the first few hours and the rest within 24 hours, the honey is considered toxic.

Simple Adulteration Tests:

Sugar syrup detection: Add 5–10 drops of 5% silver nitrate solution to the sample. A white precipitate indicates sugar syrup.

Starch syrup detection: Add drops of 10% barium chloride. A precipitate indicates starch syrup.

Honey Storage and Quality Changes: Fermentation continues during storage, breaking down sugars. At low temperatures, glucose crystallizes. In hermetically sealed containers, free water decreases in the first 20 days due to glucose crystallization and crystal hydrate formation. Later, water content stabilizes. In non-sealed containers, free water increases due to moisture absorption. Honey mainly consists of glucose, fructose, and water (90–95% total mass). Glucose's lower solubility causes faster crystallization than fructose. Thus, fructose-rich honey remains liquid longer. Over time, honey crystals become denser, forming dark liquid between crystals. This affects appearance and promotes fermentation. Stirring resolves this. Crystallization is natural and does not reduce honey's nutritional or biological value. Understanding it allows producers to manage storage effectively.

Enzyme activity also decreases over time. Storage at room temperature (23–28 °C) for one month reduces diastase activity by 2.95%. After 20 months, it can drop by 50%. Lower temperatures slow down enzyme degradation.

Containers for Honey Storage and Packaging Honey is hygroscopic, so it must be stored in sealed containers. Suitable materials include tin, glass, wood, metal, ceramics, and food-grade polymers. The container's inner surface must be clean, non-reactive, and impermeable to water vapor or aromatic compounds.

Wooden barrels (40–75 kg) must be paraffin-coated. Stainless steel or aluminum flasks (40–50 kg) are used for long-distance transport. Tin or aluminum containers (0.03–0.45 kg) are used for small quantities. Glass and ceramic containers (0.1–1.0 liters) are common for retail. Polymer containers such as polyethylene are also used but must be approved by the Ministry of Health of the Republic of Uzbekistan.

Conclusion:

Sanitary standards are crucial in evaluating honey quality. Key criteria include purity, absence of harmful substances, and adherence to proper production and storage practices. Meeting these requirements ensures high-quality, safe honey, protecting consumer health and supporting food safety standards..

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