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ORIGINAL ARTICLE

Evaluation of Authenticity in Honey Samples from Qazvin, Iran

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KEYWORDS

Honey;
Authenticity;
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ABSTRACT: Adulteration of honey is a major problem in the world, due to its high nutritional value and the expensive cost of honey. Thus, the quality of honey produced in different regions must be assessed to protect the rights of consumers. The study aims to investigate the physicochemical (hydroxymethylfurfural: HMF, moisture, ash, electrical conductivity, pH, total acidity, diastase activity, and reduction sugar), and microbiological (*clostridium perfringens*, *molds*, and *osmotolerant yeasts*) parameters of 43 honey samples. All the honey samples were collected from Qazvin province, Iran. Our results demonstrate that pH and acidity values in all of the honey samples were in the accepted limit and other physicochemical parameters include HMF (44.18%), reduction sugar (9.30%), moisture (2.32%), sucrose (53.48%), diastase activity (58.13%), fructose/glucose ratio (25.58%), electrical conductivity (9.30%) and ash (4.65%) were below the acceptable quality level. All the honey samples were in the acceptable range in terms of microbial quality (yeast, fungi and, *Clostridia*). All the honey samples are within expected microbial levels but in non-standard physicochemical conditions. Our results indicate that you can use fast, inexpensive and safe tests for identifying the adulteration in a variety of honeys (commercial and non-commercial). These measurements should be widely practiced by governmental organizations determine a fair and reasonable price for each product.

INTRODUCTION

Honey

Honey is a sweet and viscous liquid produced by bees (*Apis mellifera*) from plants nectar [1] that is used as a natural food [2, 3]. Honey has many complex compounds that are related to botanical and geographical origin, climatic conditions at harvest, climate conditions of the region and beekeeping management, specifically during honey harvest and storage [4]. This product is a valuable source of compounds for human such as biologically active substances, macro, and micro elements [5] carbohydrates, water, organic acids (gluconic acid, acetic acid, etc.), enzymes (inverts, glucose oxidase, catalase, and phosphatases), minerals, vitamins (ascorbic acid, niacin, pyridoxine, etc), proteins, pigments, antioxidant substances, aromatics and flavorings substances, sugar alcohols, colloids and phytochemicals [6-8]. Having antimicrobial activity, honey is capable of inhibiting the growth of many foodborne pathogens. Other important factors for the human health in honey include: anti-inflammatory, anti-mutagenic, anti-tumor, anti-fungal, and anti-viral [8-13].

Food fraud

Honey production is a costly process, thus producers prefer to produce honey with cheaper substances in order to

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