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Salonlar / Halls

SULTAN 1
SULTAN 2
YADE
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TOPAZ
TURKUAZ
LAPİS

40. Determinant factors of honey purchase and consumption in Trás-os-Montes region, Portugal

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Abstract

Honey is considered the only food of animal origin that can be consumed without being processed. The honey is, also, considered a natural and healthy product with dietary, nutritional and medicinal characteristics. Quality, geographical region of production, information available on the products' label, brand's reputation, variety, texture, taste, aroma, appearance, packaging and price are important factors when consumers choose to purchase honey. Thus, this research intends to identify determinant factors on which consumers base their purchasing decision. A cross-sectional study was developed based on a non-probabilistic sample of 474 individuals, of whom 399 were honey consumers. Data collection took place from March to May 2016 and was based on a questionnaire developed by Ribeiro et al. (2009), which was applied directly to consumers in the city of Bragança. Later, data was analysed with SPSS 23.0 software. The data analysis includes a univariate descriptive analysis and a multivariate analysis that involved the estimation of a binary logistic regression. The significant parameters of the logit model were taste, colour, origin and certification label, at a significance level of 1%. These characteristics explained 68.9% of the consumer's decision to purchase honey since consumers recognize authenticity and distinctive attributes of the product.

Keywords: Consumers; Honey; Trends; Determinant factors; Purchase.

JEL Codes: L66, Q13, R10

1. Introduction

Apiculture is regarded as a strategic activity for an integrated and economically sustainable use of countryside. Indeed, beekeeping is a crucial activity for the future of rural world, specially, for agriculture, as source of income and employment, and, particularly, by the role it plays in the pollination of native species and agricultural crops. Furthermore, the current healthy life style trend, including the consumption of natural products, set off important changes in the demand of beehive products, driven by the potential benefits on human health of their consumption. As it happens, honey is a natural product, not subject to any transformation process, which has in its composition several elements responsible for its medicinal, therapeutic, dietetic and nutritional properties (Pocol & Teselios, 2012; Mazol at al., 2016). Used mainly as a sweetener, this product has always been appreciated for its therapeutic properties, due to its digestive, analgesic, anti-inflammatory, antimicrobial and antiseptic characteristics, among others (Oryan et al., 2016).

In agro-food products, the consumer's first impression of the product is based on its appearance. Attributes such as colour, shape or size may also constitute an appeal to consumption. Consumers also feel stimulated by the four variables of marketing-mix, namely product, price, promotion and place. The literature refers several reasons associated with the consumption of honey, namely, the fact of being a natural and healthy product; its dietetic, nutritional and medicinal characteristics; the product quality; the region of production; the information available on the products' label, the brand's reputation; as well as, the variety, and sensory characteristics such as texture, taste, aroma, appearance, plus, packaging and price (Ribeiro et al., 2009; Ribeiro & Fernandes, 2015).

This study aims to outline the profile of the honey consumer in Bragança, describe his purchasing and consumption habits and identify the attributes of honey on which consumers base their purchasing decision.

To achieve these objectives, it was developed a quantitative, observational, cross-sectional and analytical study, based on an accidental sample of 474 individuals. Data was collected through a questionnaire developed by Ribeiro et al. (2009) that was administered directly to the inhabitants of Bragança, in the Spring of 2016. The statistical analysis involved the calculation of absolute and relative frequencies since the variables were qualitative. To compare the profile of honey consumers versus non consumers, in the case of qualitative variables, it was used the

Pearson's Chi-square test and, in case of quantitative variables, the Mann-Whitney test. Finally, it was estimated a binary logistic regression to identify the determinants of honey consumption.

2. Theoretical framework

Beekeeping is an activity with positive social, economic and environmental impacts (Zamberlan & Santos, 2010; Mogib et al., 2011). Nowadays, it plays a key role in the sustainability of the economy of less density rural territories, persisting as a viable economic alternative for the rural population, therefore positively contributing to fight human desertification in rural areas. Honey consumption has been increased worldwide, due to recognition of its medicinal, therapeutic and nutritional properties.

Due to its constituents, honey has pharmacological activity, namely, antidiabetic (since honey is considered an excellent substitute for sugar in the diet, especially in patients with diabetes) (Pipicelli & Tatti, 2009; Ahmed & Othman, 2013); antitumor (Ahmed & Othman, 2013); antibacterial and antimicrobial (Ahmed & Othman, 2013; Chen et al., 2012; Kuncic et al., 2012; Al-Waili et al., 2011; Cook et al., 2015; Pereira et al., 2015; Orvan et al., 2016; Zamora et al., 2017); antifungal (Kuncic et al., 2012; Al-Waili et al., 2011); diuretic and metabolic (honey increases the metabolism of alcohol in the blood); immunomodulatory (Al-Waili et al., 2011; Yaghoobi et al. 2013); antioxidant (Ahmed & Othman, 2013; Pereira et al., 2015; Jamróz et al., 2014; Alvarez-Suarez et al., 2014; Cauich et al., 2015); anti-inflammatory and dermatological (honey not only inhibits bacteria, but also provides a physical barrier impermeable between the wound and the bacteria, favouring the healing of wounds, burns and minimizing the effects of various skin diseases) (Orvan et al., 2016; Zamora et al., 2017; Alvarez-Suarez et al., 2014; Bardy et al., 2014). In comparison to topical agents, such as silver hydrogel or silver sulfadiazine, honey is more effective in eliminating microbial contamination, reducing wound area and improving epithelization. In addition, it stimulates the growth of wound tissues by accelerating the healing process and initiates anti-inflammatory activity, promptly reducing pain, edema and exudate production (Orvan et al., 2016). Honey also has beneficial properties in otolaryngology, namely in the prevention and treatment of oral infections, respiratory tract infections, rhinosinusal disease and otitis media. Honey is also considered effective in the (additional) treatment of mucositis, infantile cough, persistent post-infectious cough and after tonsillectomy (Henatsch et al., 2016). In cosmetic terms, honey is usually used in the production of creams, lotions and shampoos. The honey-based preparations have a softening, conditioning and moisturizing effect on the skin and hair (Ediriweera & Premarathna, 2012).

The world honey market is under a continuous process of change and adaptation to current consumption trends (Pocol & Teselios, 2012), reflex of the dynamics in consumer behaviour. Nowadays, individuals are more rational and increasingly demanding in relation to the products consumed (Zamberlan, & Santos, 2010). The embracing of a healthy lifestyle based on the consumption of unprocessed and natural foods, as well as, the treatment of diseases based on natural products, contributed to the increase in the consumption of honey. Indeed, honey is a product to which are recognized properties of authenticity and attributes innate by consumers (Pocol & Teselios, 2012; Wardle, et al., 2012), being considered the only food of animal origin that can be consumed without any previous transformation process (Pocol & Teselios, 2012; Pocol & Ványi, 2012).

The literature refers several reasons influencing the consumption of honey, namely, the fact of being a natural and healthy product; its dietetic, nutritional and medicinal characteristics; the product quality; the region of origin; the information available on the product label, the reputation of the brand; as well as, the variety, and sensory characteristics such as texture, taste, aroma, appearance, plus, packaging and price (Murphy et al., 2000; Ahmed et al., 2005; Ribeiro et al., 2009; Árváné et al., 2011; Pocol & Árváné, 2012; Yeow at al., 2013; Ismaiel et al., 2014; Zulail, et al., 2014; Wu et al., 2015).

Europe is the world's second largest honey producer. In spite of this, European honey market presents a structural imbalance between demand and domestic production, with around 40% of Europe's consumption needs answered by extra-European sources. In fact, honey imports have grown significantly, since 2011, mainly due to a decline in the importance of the European beekeeping sector, result of the climatic conditions (drought), bees' diseases and the intensive use of chemicals in agriculture (lethal to bees). Germany is the main European importer and consumer of honey, representing, structurally, around 26% and 23%, of the volume of European honey imports and consumption, respectively (EUROSTAT, 2017; FAOSTAT, 2017).

Portugal enjoys a favourable climate for the practice of beekeeping. Despite of this, historically, apiculture has been considered a complementary activity to agriculture or a hobby. Currently, although there has been a decrease in the total of beekeepers, the size of honey bee farms and the number of full-time commercial beekeepers increased (from 4%, in 2013, to 10% in 2015), consequently reinforcing honey's production capacity (FNAP, 2016). Portuguese honey production is increasing significantly, around 158% from 2000 to 2015 (FNAP, 2016; FAOSTAT (2017), with a production of

11521 tonnes in 2015 (FNAP, 2016). Similarly, the use of honey for human feeding, felt a rising tendency (nearly 71%, from 2000 to 2013), and, in 2013, the consumption per capita of honey was, approximately, 0.91 kg per year (FAOSTAT (2017). The current valorisation of the international market, the organization of the sector and the dynamics and investment felt over the last years in the valorisation qualitative of bee products are the main reasons for the good performance of domestic beekeeping sector (FNAP, 2016).

3. Methodology

The present study aims to outline the profile of the honey consumer in the city of Bragança, describe his purchasing and consumption habits and identify the honey attributes in which consumers lay on the purchasing decision. Thus, a cross-sectional, observational, quantitative and analytical study was carried out. Indeed, this work assumes a cross-sectional nature, because the data was collected just on one moment, providing a "picture" of the variables studied at a given moment. It can be classified as observational, as it is part of the social sciences and aims to outline the profile of the honey consumer and describe the purchasing and consumption habits in Bragança, a city located in Trás-os-Montes region in the northeast of Portugal. On the other hand, it can be classified as quantitative because it allows the representation of knowledge attained in the form of graphs, diagrams and calculations. Finally, this study is analytical because, beyond the use of descriptive statistics, allows studying relations between variables (Jung, 2004).

Data collection took place from March to May 2016. It was used a questionnaire developed by Ribeiro et al. (2009) that was applied directly to consumers over 18 years of age, on commercial and public places in the city of Bragança. The respondent consumers had decision-making power and/or were household food buyers. The questionnaire had three parts. The first part includes socioeconomic questions, namely, gender, age, occupation, school level, monthly household income, number of household members and place of residence. The second part contained questions on honey consumption habits, including the time of year and frequency of honey consumption, country of origin (domestic versus foreign origin) and ways of utilization of honey. Finally, the third part had questions about the buying habits of honey, namely, place, purchase determining factors and packaging (size, type, material and label). The questionnaire was anonymous and brief (no more than ten minutes). Prior to its application, it was asked permission from the directors of commercial areas.

To undertake this study, a representative sample was collected, composed by 474 individuals, which corresponds to more than 1% of the population studied (Kotler & Armstrong, 2014). In fact, in 2011, the population of the county of Bragança was of 35341 inhabitants INE, 2012). The sample included individuals aged between 18 and 99 years old. The mean was 35.4 years old (± 14.7). As can be seen in Table 1, the majority of respondents had between 25 and 64 years old (62.5%), were male (57.1%), was employed (47.4%), had a higher education degree (41.7%), lived in households of 3 (20.7%) and 4 people (38.0%), with a monthly household income up to 999 euros (51.5%) in urban settings (55.9%).

Table 1 – Sample description

Variable	Categories	Frequencies	
		n	%
Gender (N = 473)	Male	270	57.1
	Female	203	42.9
Age class (N = 469)	From 18 to 24 years	155	33.0
	From 25 to 64 years	293	62.5
	≥ 65 years	21	4.5
Professional status (N = 441)	Employed	209	47.4
	Student	148	33.6
	Unemployed	65	14.7
	Retired	19	4.3
School level (N = 470)	1st cycle	27	5.7
	2nd cycle	27	5.7
	3th circle	52	11.1
	Secondary	168	35.7
	Higher	196	41.7
Monthly household income (N = 468)	< 599 euros	105	22.4
	600 to 999 euros	136	29.1
	1000 to 1499 euros	121	25.9
	100 to 1999 euros	58	12.4
	≥ 2000 euros	48	10.2
Household size (N = 474)	1 person	54	11.4
	2 people	92	19.4
	3 people	98	20.7
	4 people	180	38.0
	≥ 5 people	50	10.5
Residence (N = 472)	Rural	208	44.1
	Urban	264	55.9

Afterward, data was analysed using SPSS software (Statistical Package for Social Sciences) 23.0. Initially, a descriptive study was carried out involving the calculation of descriptive statistics, namely, absolute and relative frequencies for qualitative variables, and measures of central tendency and dispersion for variables of a quantitative nature (Maroco, 2007; Pestana & Gageiro, 2014). Next, an analytical study was carried out in order to compare the proportions of the socioeconomic characteristics studied, namely, gender, age, professional status, school level, household monthly income, size of household and place of residence, statistically differed, considering whether the respondent was, or not, a consumer of honey. For this, the Pearson Chi-square test was used because these variables were qualitative (Maroco, 2007). In order to compare the age (quantitative variable), taking into account the same factor, the Mann-Whitney test was used (Maroco, 2007; Pestana & Gageiro, 2014). When the conditions of application of the parametric tests were tested, namely, the normality of the data using the Kolmogorov-Smirnov test with the Lilliefors correction ($n > 30$); and, the homogeneity of variances using the Levene test, both were found to be violated (p-value < 0.05). For the reasons given above, the Mann-Whitney test was also used to compare the price of honey taking into account the event of the respondent being simultaneously consumer and producer of honey.

For the execution of the analytical study, it was used a confidence level ($1 - \alpha$) of 95%, corresponding to a level of significance (α) of 5%. The decision rule is to reject the null hypothesis (H_0) when the p-value is less than or equal to the significance level, that is, when p-value $\leq \alpha$ (Maroco, 2007). The probability of significance or p-value is the lowest level of α for which it is possible to reject H_0 (Maroco, 2007). The Pearson's Chi-square test allows to test the null hypothesis of the proportion of a given attribute of the respondent to be the same, independently of being a consumer of honey or not (H_0: $\theta_{Yes} = \theta_{No}$ *vs* H_1: $\theta_{Yes} \neq \theta_{No}$) where θ is the proportion. The Mann-Whitney test allows testing the null hypothesis: the medians of the variable age are equal, against the alternative hypothesis: the age of the honey consumer of honey are different from the age of non-consumers, that is, H_0: $\eta_{Yes} = \eta_{No}$ *vs* H_1: $\eta_{Yes} \neq \eta_{No}$, where η is the median. The Mann-Whitney test also makes it possible to compare honey prices by taking into account whether or not the honey consumer is also producer.

Finally, the multivariate analysis was used, namely, the estimation of a binary logistic regression, in order to identify the determinants of honey consumption at a significance level of 1%. In the estimation of the logistic regression model, the stepwise method was used to choose the factors. The probability of honey consumption (p) is defined by the logit transformation as function of explanatory factors.

$$p\,(Yi = 0) = \frac{1}{1+e^{-X\beta}}$$

(1)

Where Y, X and β are, respectively, Y is a binary dependent variable, which assumes the value of 0, in case of a honey consumer, and the value of 1, in case of non- consumer; X is the column vector of dimension p + 1, where p is the number of explanatory variables, and β is an unknown parameter vector to be estimated.

The likelihood ratio (LR) was used for assess the overall validity of the model.

$$LR = 2LL_{final} - 2LL_{original} \sim \chi^2_{(k-1)} \quad (2)$$

To verify the individual significance of the parameters, the null hypothesis H_0: $\beta_j = 0$, was tested against the alternative hypothesis H_1: $\beta_j \neq 0$. The goodness of fit of the logistic regression model was evaluated using the Nagelkerke's R squared (R^2 Nagelkerke), which reveals the power of explanation of the model (i.e., the proportion of variation explained in the model of logistic regression), expressed by the formula (3):

$$R^2_{Nagelkerke} = \frac{R^2_{CoxeSnell}}{1-(2LL_{original})2/n}$$

(3)

Where:

$$R^2_{CoxeSnell} = 1 - \left[\frac{2LL_{original}}{2LL_{final}}\right] 2/n$$

(4)

4. Results

The distribution of respondents according to production and consumption of honey, can be observed in Figure 1. It shows that 84.2% of the respondents were honey consumers (399 individuals) and only 8.9% were honey producers.

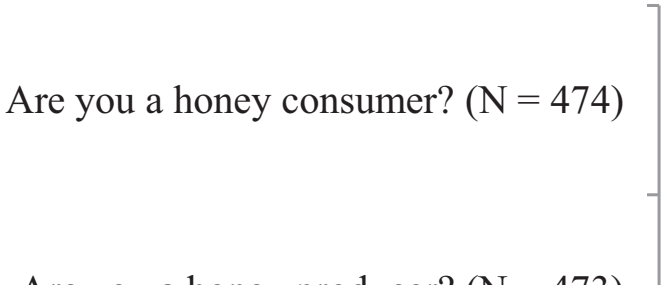

Figure 1 – Distribution of respondents as for production and consumption of honey

Honey consumers were aged between 18 and 99 years old. The mean was 35.6 years old (± 15.1). As it can be seen in Table 2, the majority of consumers had between 25 and 64 years old (61.2%), were female (58.1%), were employed (45.6%), had higher education (40.6%), lived in households of 3 (21.6%) and 4 people (36.3%) with a household monthly income up to 999 euros (50.5%), in urban settings (56.1%). A study conducted in Romania, revealed a similar profile for honey consumers (Pocol & Bolboacă, 2013).

The comparison between the profile of consumers and non-consumers of honey, using the Pearson Chi-square test, shown that there are statistically significant differences in two characteristics, namely, in the professional status (p-value < 0.01) and in the household monthly income (p-value < 0.05) (Table 2). Thus, it can be stated, with a confidence level of 99%, that the proportion of honey consumers is higher when consumers are employed. On the contrary, this proportion is statistically higher in the case of unemployed persons not honey consumers.

Table 2 – Socioeconomic profile of honey consumer

Variable	Categories	Honey consumer (%)		P-value
		No (n = 75)	Yes (n = 399)	
Gender	Male	49.3	41.6	0.221
	Female	50.7	58.1	
	Missing	0.0	0.3	
Age class	18 to 24 years	29.3	33.3	0.576
	25 to 64 years	65.3	61.2	
	≥ 65 years	2.7	4.8	
	Missing	2.7	0.8	
Professional status	Employed	36.0	**45.6**	0.002*
	Student	28.0	31.8	
	Unemployed	**28.0**	11.0	
	Retired	2.7	4.3	
	Missing	5.3	7.3	
School level	1st cycle	8.0	5.3	0.691
	2nd cycle	6.7	5.5	
	3th circle	10.7	11.0	
	Secondary	29.3	36.6	
	Higher	45.3	40.6	
	Missing	0.0	1.0	
Monthly household income	< 599 euros	21.3	22.3	0.044**
	600 to 999 euros	32.0	28.1	
	1000 to 1499 euros	173	**27.1**	
	100 to 1999 euros	**21.3**	10.5	
	≥ 2000 euros	6.6	12.1	
	Missing	1.3	1.3	
Household size	1 person	14.7	10.8	0.274
	2 people	14.7	20.3	
	3 people	16.0	21.6	
	4 people	46.7	36.3	
	≥ 5 people	8.0	11.0	
Residence	Rural	46.7	43.4	0.621
	Urban	53.3	56.1	
	Missing	0.0	0.5	

* There are statistically significant differences at the 1% significance level.

** There are statistically significant differences at the 5% significance level.

The results presented in Table 2 show, with a degree of confidence of 95%, those respondents who consumes more honey obtain a monthly household income between 1000 and 1499 euros. Conversely, for non-consumers of honey, this proportion is statistically higher in the income

class between 1500 and 1999 euros. Similar results were obtained in a study carried out in China, which found that consumers of organic products are prone to have a higher income level (Xie et al., 2015). The result of the Mann-Whitney test for comparing the attribute age shown that the median of honey consumers' age (31 years) and non-consumers (32 years) are statistically equal (p -value = 0.961). Furthermore, the majority of honey consumers prefer to consume local Portuguese honey (85.4%) in autumn and winter seasons (57.4%), once a week (29.3%) or once a month (25.8%) combined with other foods (37.8%), or use it as a medicine when they are ill (35.0%) (Figure 2).

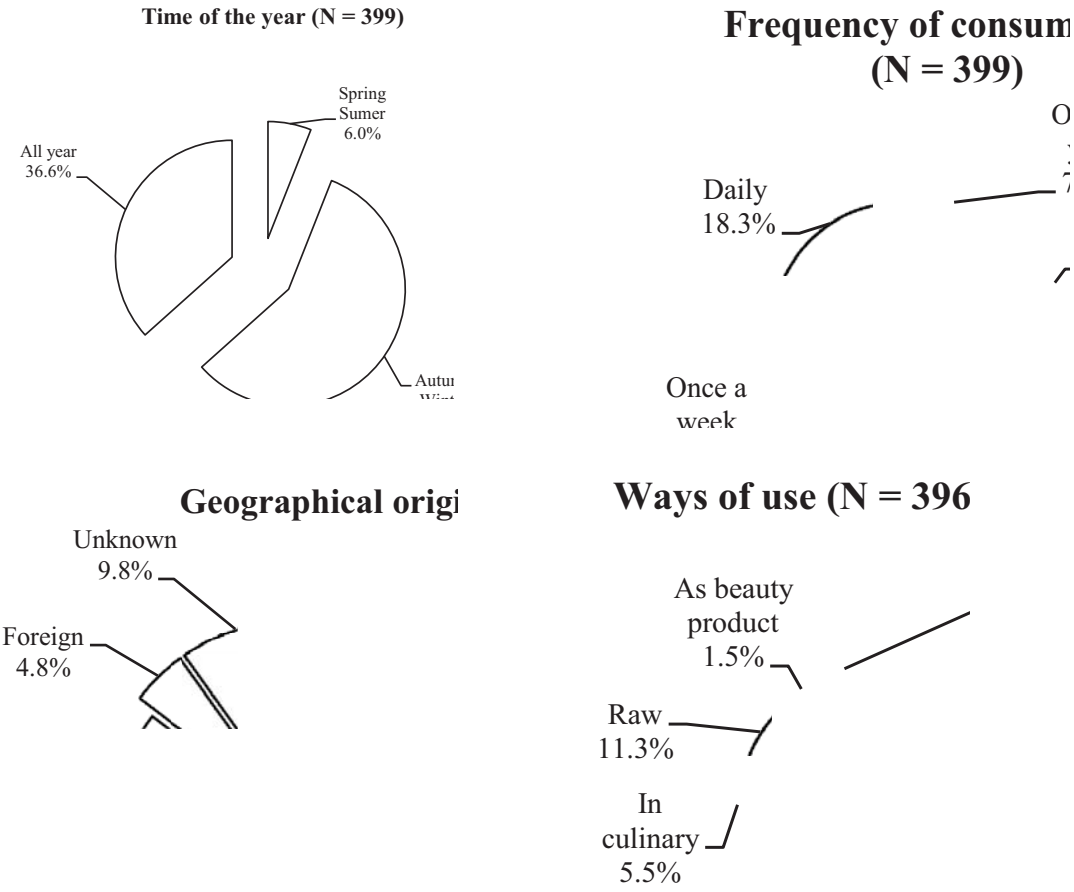

Figure 2 – Habits of honey consumption

Also in Romania, consumer preference fell to domestic honey (83.0%), which is purchased directly from the producer (69.0%) and consumed throughout all year (Pocol & Bolboacă, 2013). Similarly, Arvanitoyannis & Krystallis (2006) study reveals that honey appears to be a very common food component in Romanians' diet. In fact, they consume honey at least once a week (33.3%) or once a month (42.7%). Conversely, in a study conducted in Hungary, only 9.3% of consumers bought honey on a weekly basis, while 25.3% did so monthly (Ványi et al., 2011). Another study showed that Polish consume honey mainly because it has a positive

impact on health (Kowalczuk et al., 2017). They use it essentially in sandwiches and as a sweetener, several times a month (40.0%) or less than once a month (25.0%). The most mentioned factors regarding Portuguese consumers' preference for national honey include quality, its contribution to the development of regional economy, reliability and proximity (Ribeiro et al., 2009).

Consumers are stimulated by the four variables of marketing-mix (Barroso & Madureira, 2005), namely product, price, promotion and place. Price is one of the most visible marketing-mix variables for consumer. Effectively, price is the amount of money customers must pay to get a particular product (Barroso & Madureira, 2005). Associated with high quality comes a premium price (Barroso & Madureira, 2005; Mello & Marreiros, 2009). In other words, the consumer is increasingly willing to pay for the variety, innovation and quality of food products. However, some researchers consider that a high premium price may act as a barrier to increasing the market share of these products (Xie et al., 2015). The use of attractive prices may also be a way to attract the attention of consumers (Spohr & Espartel, 2009). When questioned about the fairness of the price paid for a kilogram of honey, the majority of consumers (66.6%) considered that honey is neither expensive nor cheap (Figure 3). This percentage dropped, when compared to the findings (76.5%) of an earlier study carried out in Portugal in the same region (Ribeiro et al., 2009). Moreover, respondents were asked about their perception on what a fair price for honey would be. The results shown that surveyed individuals (N = 395) point out that a fair price for honey would be, on average, 3.9 euros per kg (± 1.54). In the earlier study mentioned above, in the same region, the fair price perception ranged between 2.5 and 7.5 euros per kg, with an average of 3.53 euros per kg (Ribeiro et al., 2009). There was a 10.5% increase in the price considered fair by consumers, corresponding to an average annual rate of 1.5%. Given that the average inflation rate for the period was about 1.1%, this trend reflects a real increase in honey price valorisation (INE/Pordata, 2017). Comparing the price honey consumers consider fair given that they were honey producers (Mann-Whitney test), there were statistically significant differences (p-value = 0.000). The honey producers (n = 41) considered that the fair price would be 4 Euros per kg, on average. Honey consumers not producers (n = 375) value less honey, considering that, on average, 3.75 euros per kg would be a fair price. The comparison with former research on Portuguese market (Ribeiro et al., 2009), show a significant decrease in that gap since, in the earlier study, the price considered fair by consumer producers and non-producers differ, around 1 euro per kg, with 4.4 euros per kg, for producers, and 3.4 euros per kg, for non-producers, on average (Ribeiro et al., 2009).

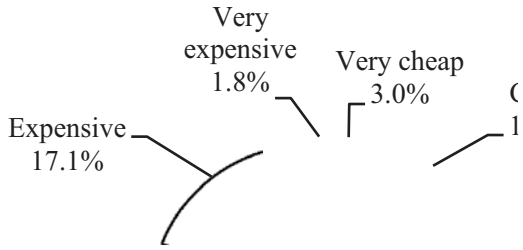

Figure 3 – Perceptions regarding honey price (N = 398)

Advertising is an important component of marketing-mix, as part of the promotion strategy. It can be a way of influencing the target market by communicating the attributes and advantages associated with the use of the good or service. Advertising can be related to a brand, but also to promote a product (Barroso & Madureira, 2005). When questioned if have ever seen honey advertising, the majority of consumers (52.9%) answered negatively. This may be due to the fact that specialized advertising is dominated by ads for high-calorie and low-nutrient foods, where the message disseminated has a major impact on consumer preferences (Radnitz et al., 2009). It should also be noted that, in a study carried out in Portugal, 40.6% of respondents referred having never seen honey advertising (Ribeiro et al., 2009). Given that more and more consumers do not have access to information regarding honey characteristics and its health benefits, it is necessary to promote communication campaigns that can enlighten consumers and boost honey consumption (Ribeiro et al., 2009).

Figure 4 shows the factors valued in honey by the consumers at the moment of buying it. Taste stands out with 71.4%, followed by aroma and appearance (crystalline) with 57.1%, and colour (light or dark) with 51.5%. While the least important factors are density (liquid or thick) with 47.2%, geographical origin and the certification label with about 42.3% and, finally, price with 41.5%. Consumers greatly value the geographic origin of production, especially when the media disseminate news reporting the adulteration of honey produced abroad (Wu et al., 2015). Similarly, taste was also the most prominent factor in studies conducted in Poland (Kowalczuk et al., 2017), Hungary and Romania (Pocol & Ványi, 2012) and Bragança, Portugal (Ribeiro et al., 2009).

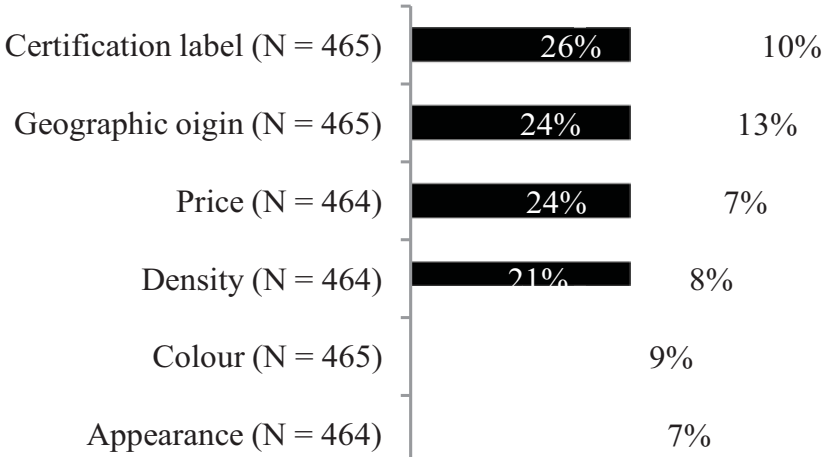

Figure 4 – Attributes more valued in honey

In agro-food products, the appearance of a product creates the consumer's first impression of the food. Attributes such as colour, shape or size may also appeal to the consumption of the product. Without an attractive appearance, an agro-food product can be rejected at first sight, even before it is tasted (Barroso, & Madureira, 2005). In this study, consumers preferred amber-coloured honey (balanced, neither light nor dark) (37.4%) or light honey (36.7%), as can be seen in Figure 5.

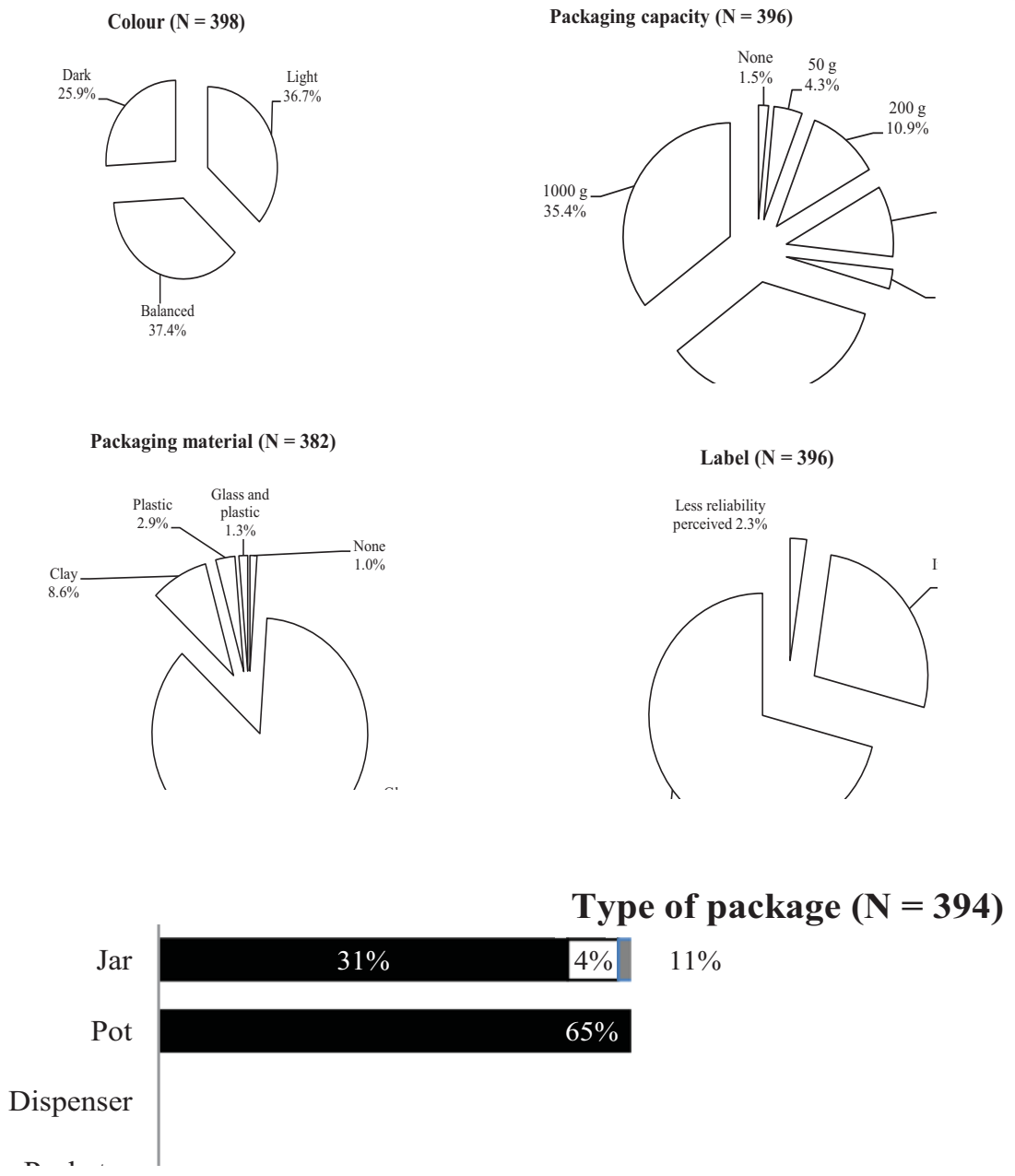

Figure 5 – Beliefs as to features of honey's core product and actual product

Packaging is a key feature of the tangible product. Packaging must be designed in such a way as to enable the preservation of the product and its transport and storage in good conditions (Barroso & Madureira, 2005). Packages and labels also serves to communicate the characteristics of the product, how to use transport, recycle, or dispose of the package or product, the expiration date, among others. Packaging may also function as a differentiating factor, given that it is, indeed, an integral part of the product. In addition, food products often require marketing and technical approaches applied to the marketing of other products and services (Ahmed et al., 2005). The main trends driving the growth of

packaged food market are convenience, functionality and indulgence (Ahmed et al., 2005). In this study, honey consumers preferred the higher capacity, 0.5 kg (35.1%) and 1 kg (35.4%), glass (86.1%) containers, duly labelled, as labelling broadens perceived reliability (70.8%). As can be seen in Figure 5, the preferred type of container is the glass jar (54.1%). When comparing these results with the earlier study conducted in the same city (Ribeiro et al., 2009), it was verified that consumers' buying habits were unchanged. Similar results were obtained in Ireland for packaging attributes. However, Irish consumers preferred darker honey (Murphy et al., 2000).

Figure 6 shows that honey consumers favour short supply chains. In fact, 44.5% of honey consumers often buy honey directly from the producer. In the study by Ribeiro et al. (2009) this percentage was even higher (51.7%). Similar results were obtained in a study conducted in Poland (Kowalczuk et al., 2017), in which outdoor markets (32.0%) and apiaries (27.4%) were the most frequent places to purchase honey. The information and communication technologies, namely, the Internet can complement other marketing channels (Canavan et al., 2007). Its role in the information management and in strengthen the relationship with consumers can even be more significant than online sales (Canavan et al., 2007). Internet can be an important sales channel for producers of products with specific attributes, products with high added value and products with more elaborated packaging potentially used as gifts (Canavan et al., 2007). In fact, the gourmet market offers to small agro-industries the opportunity to operate in a market niche with great growth potential answering to consumers' demand for high-quality artisanal food (Murphy et al., 2000). Consumers associate the gourmet concept to high-quality products with unique characteristics, produced locally, in small quantities that are usually certified (Ribeiro & Fernandes, 2015; Dreyer et al., 2016).

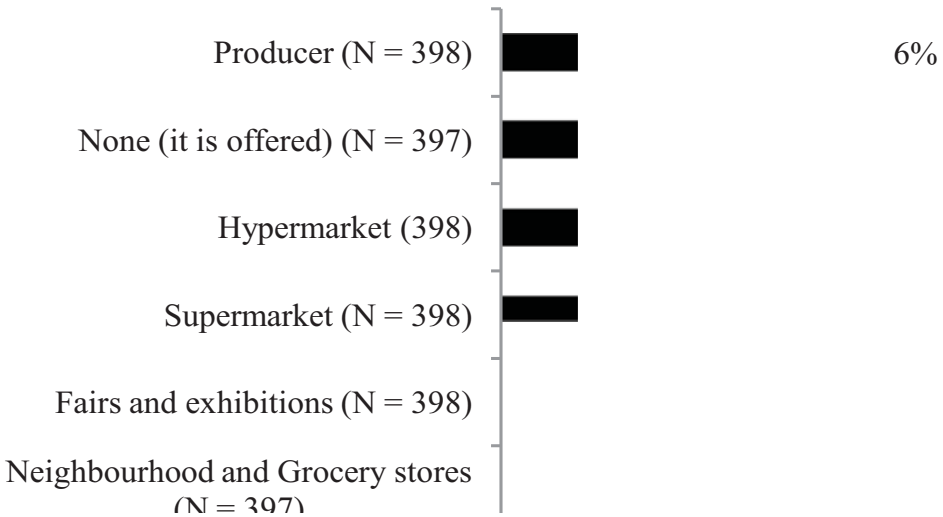

Figure 6 – Place of honey purchase

Crystallized honey is a good indicator of quality and purity. However, by lack of knowledge, consumers often misjudges it. Figure 7 shows the opinion of honey consumers regarding crystallized honey. As can be seen, 60.5% of consumers consider that this honey is good for consumption (60.5%). The majority of consumers (69.7%) consider that crystallized honey is not spoiled, or old (53.7%), do not has sugar added (51.1%) and is not of inferior quality (48.0%). These results show that the consumers of Bragança are, in general, knowledgeable about the product. Despite this, the high percentage of respondents (of the order of 30%) without opinion (neither agree nor disagree) regarding crystallized honey, exposes the need for communication campaigns to inform consumers and boost honey consumption, as mentioned earlier (Ribeiro et al., 2009).

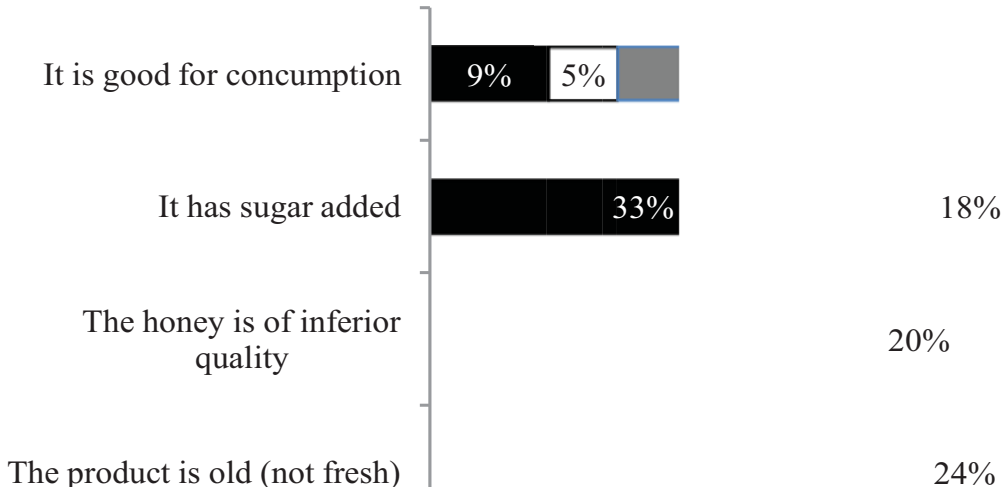

Figure 7 – Beliefs of consumers regarding crystalized honey

The output of the logistic regression indicate that the model estimated is statistically significant (p-value = 0.000), as can be seen in Table 3. The test to the global validity of the model shows that its explanatory power is greater than the model containing only the independent term (Table 3).

Table 3 – Binary Logistic Regression Model

Dependent variable: Honey consumption Y = 0 (Yes); Y = 1 (No)

Variables	β	Standard Deviation	p-value
Constant	1.719	0.277	0.000*
Taste	-4.287	0.629	0.000**
Colour	-2.974	0.871	0.001*
Certification label	3.988	1.018	0.000*
Geographic origin	-2.116	0.727	0.004*
Likelihood Log = 262.948; p-value = 0.000 Nagelkerke's R^2 = 0.689			

* Significant parameter at 1% significance level.

The test of individual parameters significance show that the parameters taste, colour, geographic origin and certification label are statistically significant, for a level of significance of 1%. These attributes account for 68.9% of the consumer's decision to purchase honey.

Certification label is significant for non-consumers of honey. This can be explained because they probably value this attribute when purchasing honey to offer to someone, given that certification label often works as indicator of superior quality. Contrary, the parameters taste, colour and the geographic origin are important attributes valued by honey consumers in the purchasing decision-making process of the product.

5. Conclusion

The objective of this study was to outline the profile of honey consumers, describe buying and consumption habits of honey and identify determining factors for its consumption in Bragança, a city in north-eastern of Portugal. The majority of honey consumers had ages between 25 and 64 years old, were female, employed, had a higher education degree, lived in an urban setting, in households of 3 and 4 people with a monthly income up to 999 euros. Honey consumer profile is statistically different from the profile of non-consumer. Differences were found regarding the professional status and the monthly income of the household. The professionally active individuals are the ones consuming more honey and the unemployed ones consuming the smallest amount. Regarding monthly income of the household, it was found that the respondents who consume more honey earned income between 1000 and 1499 euros, while lesser consumption of honey is found in incomes between 1500 and 1999 euros.

As for the consumption habits, it was possible to verify that the majority of the consumers of honey preferred to consume honey of national origin, once a week or once a month, usually in autumn and winter seasons, mixed together with other foods or used as a medicine. The preference for domestic honey fell on factors such as quality, contribution to the development of the regional economy, reliability and proximity of producers (origin). In fact, honey was often purchased directly from the producer. Honey is a product that, in the opinion of most consumers, is not a superfluous good, it is neither expensive nor cheap, and the fair price being, on average, €3.9 per kg. Honey consumers prefer honey packaged in properly labelled and high capacity glass jar (0.5 and 1 kg).

Honey is a product to which the consumer recognizes properties of authenticity and innate attributes. In fact, certification label, taste, colour and geographic origin have proved to be determining attributes in the honey purchasing decision process.

The cross-sectional nature of the study is a limitation of the research that is susceptible to be overcome in future investigations that allow following the evolution of the buying and consumption habits of this type of product. On the other hand, given that it is a non-probabilistic, accidental sample, the results are valid only for the group of consumers studied, and cannot be extrapolated to the population. To fill this gap, future studies should be based on representative probabilistic samples.

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