

PREFERENCES AND CONSUMPTION OF DRIED FRUIT AND DRIED FRUIT PRODUCTS AMONG DUTCH, FRENCH AND POLISH CONSUMERS

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A B S T R A C T

As information concerning dried fruit and dried fruit products are hardly available, the recognition of consumers' preferences for dried fruit and products containing them in different contexts was undertaken. The data were collected in the form of questionnaire submitted via Internet to 1092 Dutch, French and Polish respondents. The results revealed that dried fruit as well as products with dried fruit are eaten rather occasionally, however, Polish respondents occurred to be more familiar with dried fruit than Dutch or French ones. The highest number of them (among all 3 investigated nationalities) declared that they eat dried fruit once a day or few times a week. Although 58.3% of Dutch respondents claimed that they never eat dried fruit, 8.6% admitted that they eat raisins once a day. Moreover, raisins occurred to be the most preferred fruit not only for Dutch but also for French and Polish respondents whereas breakfast cereals occurred to be one of the most preferable product among all 3 investigated nationalities. If it comes to the consumption context, Dutch and French respondents declared dried fruit consumption mainly in the morning, whereas Polish ones claim that they eat dried fruit in the afternoon and evening, in the form of a snack. French and Dutch respondents were rather undecided whether they eat dried fruit in the main meal or as a snack. All 3 nationalities strongly agreed with the statement that they eat dried fruit as well as products with them at home. Additionally, Polish consumers were very positive about statement that they eat dried fruit during TV watching.

Key words: dried fruit, dried fruit-based products, consumption, consumption context, preferences

INTRODUCTION

Greater intake of fruit and vegetables can lower risk of cancer and death due to cardiovascular disease, as well as diabetes and obesity. Thus recent FAO/WHO recommendations advise intake of a minimum 400g of fruit and vegetables per day (Genkinger et al., 2004; WHO, 2003). Healthy eating was one of the most important factors in food choice among European citizens (Lennernäs et al., 1997). They were conscious that more frequent consumption of fruit and vegetables should be a part of a healthy diet (Margetts et al., 1997). However, according to European Commission, the intake of fruit and vegetables in most European countries is below the recommended level (EC, 2007). One of the barriers in increase of fruit and vegetables consumption is time required to prepare them, what is understandable especially that convenience is one of the top global trends (Eurmonitor, 2007d; Cohen et al, 1998; Balch et al., 1997). Thus, it is not surprising that if it comes to fruit, consumers require product available in many outlets most of the year, suitable for many uses, with long shelf-life and not messy (Jaeger, 2006). The time scarcity results also in multitasking as people do more than one thing at the same time. Food consumption can be accompany by other activities such as watching TV or walking (Kaufman et al., 1991). The food industry has to respond to this faster societal pace (Jabs and Devine, 2006). Osmo-convective dewatering of fresh fruit before

drying seems to be a promising step as dried fruit without substantial losses of nutritional ingredients can be produced (Konopacka, 2006). This new product should find a strong basis in continuous and deep-rooted understanding of the consumer in the relevant product categories (Urban and Hauser, 1993). Thus, the strong co-operation of technologists and marketers during product designing is required. Consumer and market researchers have paid more and more attention to the consumption context, as it highly influences food choices (Meiselman, 2007; Shutz and Martenz, 2001). The consumption context is a set of events and experiences that are not part of the referenced consumption event but have some relationship to it (Rozin and Tuorila, 1993). It can include physical environment, as for example knowledge about specific location for drinking and eating provides information how they fit into person's life (Meiselman, 2007; Belk, 1974; Bisogni, 2007). However, according to Marshall and Bell (2003), location is intricately linked to the eating occasion and they both are associated with certain types of food. Additionally, the information about the situations in which product is most likely consumed allow to better position product on the market and improve targeting to specific consumer segments (Cardello and Schutz, 1996). Even extremely liked product, e.g. ice-cream, when served in an inappropriate situation can be judged lower (Cardello et al., 2000).

The development of novel dried fruit is undertaken in one of Work

Packages of ISAFRUIT project (ISAFRUIT, Technical Annex, 2006). Newly designed dried fruit will be launched on the market as a snack for a direct consumption or as crucial compound of other products. The knowledge about consumption and consumption context of such products is hardly available, thus the questionnaire was developed to evaluate these items. As food eating and nutrition are influenced by culture, cultural comparisons provide important understanding and practical applications for work on food choice (Saba, 2001). That is why, the presented data were collected among Dutch, French and Polish respondents.

The main objective of this study was to recognize consumption and consumption context of dried fruit and products containing dried fruit in France, the Netherlands and Poland.

To evaluate this issue deeply the following research questions were formulated:

- To what extent different nationalities consume dried fruit?
- Which dried fruits are mostly consumed? How much is consumed?
- Which products with dried fruit are consumed? How much is consumed?
- When and in which situations are dried fruit consumed?
- When and in which situations are dried fruit product consumed?

MATERIAL AND METHODS

Consumer survey

Six questions containing 24 variables, were included into the

questionnaire, which was sent to 1092 Dutch, French and Polish respondents via Internet (what allowed to present questions randomly). The respondents with the habit of eating dried fruit once a month or more often were reached. As Dutch respondents seemed to be less interested in dried fruit than Polish ones (Jesionkowska et al., 2007), also persons who declared consumption of products with dried fruit once a month and more often, were included into the study. Due to that, the same questions were formulated in the same way for dried fruit and dried fruit based products. Thus, different versions of questionnaire were presented to consumers of dried fruit or products with dried fruit, what was also possible thanks to submission of the questionnaire through Internet.

Questions concerning consumption frequency of dried fruit and products with them as a whole category, were followed by more detailed one about consumption frequency of certain dried fruits (raisins, dried plums etc.) and particular products with dried fruit (cakes, breakfast cereals etc.). Additionally, questions about consumption frequency of dried fruit and dried fruit-based products in certain time of the day (morning, afternoon, evening) and occasion (snack, main meal) were placed. All these questions had frequency scale with the following items: 6-7 times a week, 3-5 times a week, 1-2 times a week, 3-4 times a month, 1-2 times a month, less than once a month, never. To simplify the analysis of answers the

scale was unified for all questions and the subsequent descriptors were used: daily, weekly, monthly and never. Moreover, the questionnaire contained issues about appropriate location for the consumption of dried fruit and dried fruit-based products (at home, out of home) as well as activity accompanying the consumption (travelling, watching TV). In this case respondents had to express their level of agreement with particular statements on the 5-point Likert scale (1 – I totally disagree; 5 – I totally agree).

In the article the following abbreviations were used in order to facilitate the reading:

DF – dried fruit

PDF – products with dried fruit

Data analysis

To analyze the significant association of nationality and frequency of consumption of dried fruit and products with dried fruit, Pearson's chi-square test was used. The same analysis was performed for frequency of dried fruit consumption at certain time of the day and eating occasion.

To check the effect of nationality on location where dried fruit or products with dried fruit are consumed, as well as the activities which can accompany the consumption, one-way independent ANOVA was used. Additionally, as the data violate the assumption of ANOVA, the Kruskal-Wallis test was performed. Only the outcomes which were significant in parametric and non-parametric tests were taken into account. The Bonf-

feroni paired comparison (as parametric test) and the Wilcoxon signed-rank test (as non-parametric test) were used in order to check whether there are significant differences for consumption location and activities between particular nationalities. All analyses were performed in the SPSS 15.0 for Windows program.

RESULTS AND DISCUSSION

Frequency of dried fruit and products with dried fruit consumption

In Figure 1 the results concerning dried fruit and products with dried fruit consumption in relation to investigated nations are presented. Dried fruit seems to be eaten rather occasionally as 43.5% of respondents in total claimed that they consume that product ones or two times a month. It means that the consumption of dried fruit is less frequent than the fresh alternatives. In the Netherlands only 4.3% of respondents indicated daily dried fruit consumption. The highest daily and weekly consumption of dried fruit (8.1% and 23.8% respectively) was declared by Polish respondents (Fig. 1). If it comes to French participants, almost 60.0% of them declared monthly intake of dried fruit and only 18.9% eat this product once a week or more often. Dutch respondents were less familiar with dried fruit than Polish and French as only 10.2% of them indicated that they consume dried fruit more often than once a week. Moreover, almost 60.0% of Dutch interviewed consumers claimed that they never eat dried fruit. These

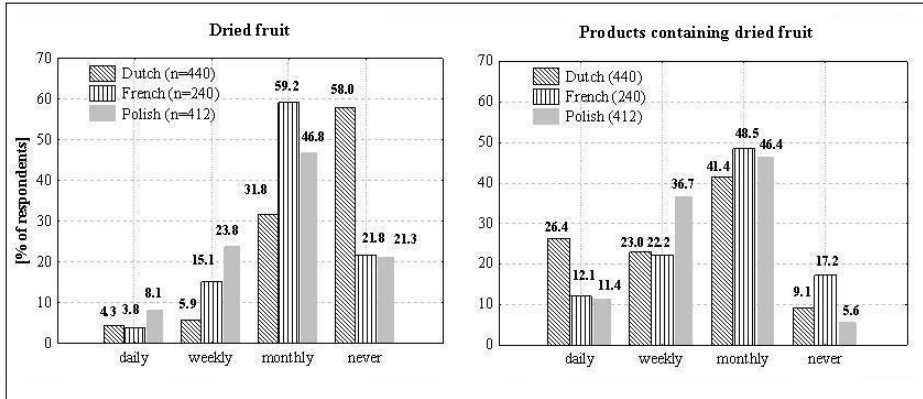


Figure 1. Frequency of dried fruit and products containing dried fruit consumption in general

findings revealed that consumption of dried fruit has reverse tendency to the consumption of fresh alternatives. According to Euromonitor (2006a; 2006b; 2006c), the consumption of fresh fruit was lowest in Poland (36.2 kg/capita/year) and highest in the Netherlands (94.7 kg/capita/year). Dutch respondents perceived dried fruit as products which are not so important nowadays when fresh fruit are easily available, whereas in the opinion of Polish consumers dried fruit are rather convenient products which are at hand in Polish homes, especially during Christmas or Easter, as it is a component of traditional Polish dishes (Jesionkowska et al., 2007; Piekut, 2006).

Products containing dried fruit seem to be more popular than dried fruit among all three investigated countries (Fig. 1). However, the differences in frequency consumption between nationalities were also significant ($\chi^2(6) = 73.68, p < 0.001$). Especially Dutch consumers seem to

be far more familiar with dried fruit-based products than dried fruit. Only 9.1% of respondents declared that they never eat products containing dried fruit (comparing to 58.0% for dried fruit). Moreover, over a quarter of them claimed that they eat dried fruit-based products once a day, whereas only 12.1% of French and 11.4% of Polish consumers indicated such frequency of these products consumption. Similarly as it was for dried fruit, 43.2% of all respondents declared monthly consumption of dried fruit-based products.

Preferences for certain dried fruit and products with dried fruit

To obtain information about a kind of dried fruit which is appreciated in the eyes of consumers, the question about frequency of certain dried fruit consumption was asked. Only consumers who declared dried fruit intake answered it. A significant association was found between frequency of

Table 1. Frequency of certain dried fruit consumption

Dried fruit	Nationality	Frequency of specific DF consumption (% of respondents)				χ^2 (6)	P
		daily	weekly	monthly	never		
Raisins	Dutch (n=185)	8.6	26.5	39.5	25.4	74.29	<0.001
	French (n=186)	1.6	14.5	51.1	32.8		
	Polish (n=321)	5.6	45.2	35.8	13.4		
Dried plums	Dutch (n=185)	2.7	6.5	22.7	68.1	82.26	<0.001
	French (n=186)	1.6	5.4	53.2	39.8		
	Polish (n=321)	2.8	20.9	40.8	35.5		
Dried apples	Dutch (n=185)	0.5	7.6	13.5	78.4	111.76	<0.001
	French (n=186)	0.0	3.2	11.3	85.5		
	Polish (n=321)	2.8	20.6	32.4	44.2		
Dried figs/dates	Dutch (n=185)	1.1	10.3	24.9	63.8	13.78	<0.05
	French (n=186)	1.1	4.3	32.3	62.4		
	Polish (n=321)	0.3	12.1	32.7	54.8		
Dried apricots	Dutch (n=185)	4.9	10.8	24.9	59.5	50.06	<0.001
	French (n=186)	0.0	6.5	35.5	58.1		
	Polish (n=321)	1.2	22.4	34.6	41.7		

consumption of certain dried fruit and nationality (Tab. 1). The most preferred dried fruit among all three nationalities were raisins. 34% of the whole sample indicated that they eat raisins once a week or more often and 42.1% declared monthly consumption of these products. Although Dutch respondents seemed not to be familiar with dried fruit, the highest number of them among all three investigated nationalities claimed that they eat raisins once a day (8.6%). The results concerning frequency of certain dried fruit consumption confirmed previous finding that dried fruit are products which are consumed rather occasionally – a few times a month. According to FAO

(2003) Polish consumers eat the highest amount of apples (fresh and processed) among all fruit, in France and the Netherlands the consumption of apples is lower than consumption of oranges and mandarins. However, the declared by French and Dutch frequency of dried apples consumption was the rarest one, what means that these nationalities hardly know this product. Although Polish respondents claimed that they eat dried apples more often than French or Dutch ones, the consumption was also not so frequent.

The frequency of consumption of products with dried fruit was also rather rare (Tab. 2). The whole sample of respondents answered this question.

Table 2. Frequency of certain products with dried fruit consumption

Product	Nationality	Frequency of specific PDF consumption (% of respondents)				$\chi^2(6)$	p
		daily	weekly	monthly	never		
Cake	Dutch (n=440)	0.0	0.9	9.3	89.3	444.95	<0.001
	French (n=240)	0.0	5.4	45.4	49.2		
	Polish (n=412)	3.2	27.2	46.8	22.8		
Cookies	Dutch (n=440)	5.7	27.3	32.7	34.3	205.67	<0.001
	French (n=240)	0.0	1.7	21.7	76.7		
	Polish (n=412)	3.4	30.1	42.5	24.0		
Breakfast cereals	Dutch (n=440)	12.0	24.8	15.2	48.0	41.12	<0.001
	French (n=240)	7.1	21.7	27.1	44.2		
	Polish (n=412)	11.2	35.2	21.4	32.3		
Muesli bars	Dutch (n=440)	1.1	13.2	23.6	62.0	71.68	<0.001
	French (n=240)	0.4	14.6	32.5	52.5		
	Polish (n=412)	5.6	24.0	33.3	37.1		
Sweets such as raisins in chocolate	Dutch (n=440)	0.0	4.1	22.5	73.4	304.58	<0.001
	French (n=240)	0.4	2.9	17.9	78.8		
	Polish (n=412)	4.1	27.9	43.2	24.8		
Student mix	Dutch (n=440)	0.0	4.8	21.4	73.9	173.62	<0.001
	French (n=240)	0.0	4.6	53.3	42.1		
	Polish (n=412)	3.2	20.4	32.0	44.4		
Fruit tea	Dutch (n=440)	6.1	13.0	12.0	68.9	223.12	<0.001
	French (n=240)	1.7	3.8	11.3	83.3		
	Polish (n=412)	15.0	29.9	25.0	30.1		

One of the most frequently consumed products containing dried fruit were breakfast cereals. 12.0% of Dutch, 7.1% of French and 11.2% of Polish respondents declared daily consumption of it. Also over 20.0% of Dutch and French and over 30.0% of Polish ones indicated that they eat breakfast cereals with dried fruit a few times a week. Due to negative publicity and governmental actions criticizing high content of undesirable elements such as sugar, fat and salt in breakfast cereals (Euromonitor, 2007ab), it is

not surprising that consumers choose the healthier options and consume breakfast cereals with addition of dried fruit. If it concerns Poland, the popularity of breakfast cereals with dried fruit is in consistency with the desire for greater menu choices and health benefits combined with convenience (Euromonitor, 2007c). Apart from breakfast cereals, cookies were popular among Dutch, muesli bars among French and fruit tea among Polish consumers.

Table 3. Frequency of dried fruit consumption at certain time of the day and certain occasion

I eat dried fruit	Nationality	Frequency of DF consumption (% of respondents)				$\chi^2(6)$	p
		daily	weekly	monthly	never		
In the morning	Dutch (n=185)	10.3	17.8	13.0	58.9	24.02	<0.05
	French (n=186)	4.8	19.4	28.5	47.3		
	Polish (n=321)	4.4	15.0	27.7	53.0		
In the afternoon	Dutch (n=185)	1.1	16.2	17.3	65.4	129.27	<0.001
	French (n=186)	1.1	7.5	42.5	48.9		
	Polish (n=321)	2.5	33.6	43.0	20.9		
In the evening	Dutch (n=185)	2.2	13.0	24.9	60.0	92.56	<0.001
	French (n=186)	1.1	9.1	41.9	47.3		
	Polish (n=321)	5.6	29.9	40.8	23.7		
As a snack	Dutch (n=185)	2.7	17.8	28.1	51.4	95.47	<0.001
	French (n=186)	1.1	10.2	38.7	50.0		
	Polish (n=321)	6.9	34.0	40.2	19.0		
As a part of main meal	Dutch (n=185)	4.3	13.0	27.0	55.7	26.16	<0.001
	French (n=186)	2.7	7.5	38.7	51.1		
	Polish (n=321)	2.2	10.3	19.9	67.6		

Consumption context of dried fruit and products with dried fruit. Time of the day and occasion

Dutch and French consumers who declared dried fruit consumption stated that they eat them mainly in the morning (28.1 and 24.2% respectively indicated daily or weekly intake) (Tab. 3). The consumption pattern of the Polish respondents was different as about one third of them declared weekly dried fruit consumption in the evening or in the afternoon. Also, 40.9% of them claimed that they eat dried fruit in the form of a snack (daily or weekly), whereas Dutch and French respondents were not so decisive if it comes to this occasion of dried fruit consumption. Almost equal number of them declared monthly consumption of dried fruit as a snack as well as a part of main meal. In the case of French respondents, the data concerning dried fruit were in inconsistency with previous research occasions of fresh fruit consumption, as according to Bellise et al. (2003) fresh fruits are consumed mostly in the context of main meal.

Those respondents who declared consumption of products containing dried fruit but not dried fruit as such, irrespectively of nationality indicated that they eat dried fruit-based products mainly as a snack (Tab. 4). On the contrary to dried fruit category, the similar number of Polish respondents declared daily and weekly consumption of products with dried fruit in the morning, in the afternoon and in the evening.

The location and activity influencing dried fruit and products with dried fruit consumption

In Figure 2 the degree of consumer agreement toward statements concerning the location and activity accompanying eating are illustrated.

All three nationalities were highly agreed with the statement that they eat dried fruit at home (Fig. 2). Polish respondents were more positive about that statement than Dutch and French ones and these difference was significant according to Bonferroni post-hoc pairwise comparison test as well as Wilcoxon signed-rank test. In Poland respondents were also very positive about the statement that they eat dried fruit during watching TV. French respondents were negative about that and Dutch were rather neutral. This difference in attitude was significant in parametric and non-parametric test. Polish respondents also highly agreed that dried fruit are sometimes eaten out of home. The degree of agreement with this statement of Dutch and French respondents was rather neutral and the difference between these 2 nationalities was not significant.

One-way ANOVA and Kruskal-Wallis test show no significant effect of nationality if it concerns dried fruit as well as products with dried fruit consumption during travelling. However, all three nations were more positive about statement concerning eating products containing dried fruit than plain dried fruit.

As for dried fruit, also for products containing dried fruit all

Table 4. Frequency of products with dried fruit consumption at certain time of the day and certain occasion

I eat products with dried fruit	Nationality	Frequency of PDF consumption (% of respondents)				$\chi^2(6)$	p
		daily	weekly	monthly	never		
In the morning	Dutch (n=255)	9.8	19.6	18.0	52.5	15.42	<0.05
	French (n=54)	3.7	18.5	35.2	42.6		
	Polish (n=91)	5.5	12.1	17.6	64.8		
In the afternoon	Dutch (n=255)	2.4	16.5	13.3	67.8	26.13	<0.001
	French (n=54)	0.0	14.8	35.2	50.0		
	Polish (n=91)	1.1	13.2	34.1	51.6		
In the evening	Dutch (n=255)	0.8	8.6	17.6	72.9	17.84	<0.05
	French (n=54)	0.0	1.9	13.0	85.2		
	Polish (n=91)	1.1	14.3	29.7	54.9		
As a snack	Dutch (n=255)	2.4	27.8	22.4	47.5	11.10	<0.05
	French (n=54)	0.0	24.1	29.6	46.3		
	Polish (n=91)	1.1	15.4	36.3	47.3		
As a part of main meal	Dutch (n=255)	4.7	10.2	15.3	69.8	18.66	<0.05
	French (n=54)	0.0	3.7	5.6	90.7		
	Polish (n=91)	1.1	2.2	12.1	84.6		

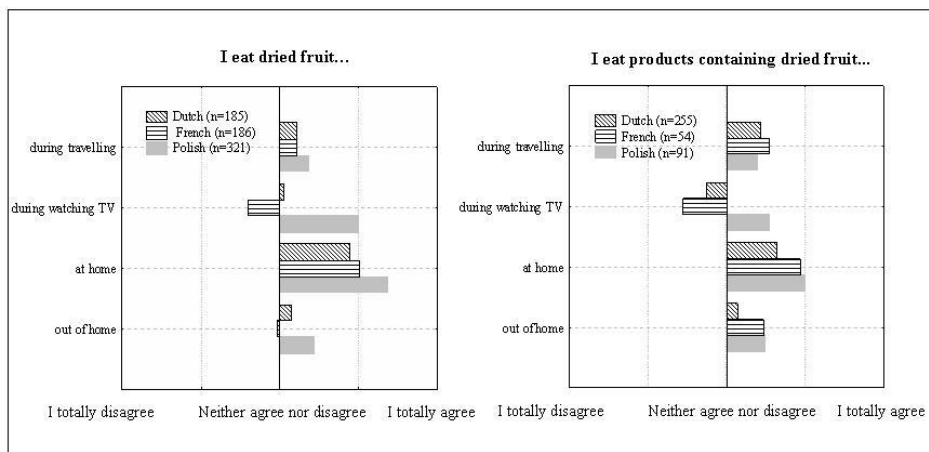


Figure 2. The level of agreement of Dutch, French and Polish respondents towards statements concerning consumption of dried fruit and products containing dried fruit at certain location and during particular activity

respondents stated that they eat dried fruit at home.

Moreover, all nations agreed that they eat dried fruit out of home. Bonferroni pairwise comparison was insignificant for all nationalities for this statement. Only Wilcoxon signed-rank test was significant for Dutch and Polish consumers ($p < 0.05$).

CONCLUSIONS

Dried fruit are eaten rather occasionally in all countries investigated. Products with dried fruit, although on average eaten more frequently than dried fruit, are also consumed a few times a month. Raisins within dried fruit, and breakfast cereals as product with dried fruit, occurred to be the most popular products among all three nationalities investigated. Polish respondents were more familiar with plain dried fruit than the others. As concerns the consumption context, Dutch and French respondents declared dried fruit consumption mainly in the morning, whereas Polish ones claimed that they eat dried fruit in the afternoon and evening, in the form of a snack. All three nationalities strongly agreed with statement that they eat dried fruit as well as products with them at home. Additionally, Polish respondents were also positive towards statements concerning possibilities of dried fruit consumption in various locations. On the contrary to Dutch and French, the Polish respondents admitted that they eat dried fruit during watching TV.

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PREFERENCJE I KONSUMPCJA SUSZONYCH OWOCÓW I PRODUKTÓW ZAWIERAJĄCYCH SUSZONE OWOCE WŚRÓD KONSUMENTÓW Z HOLANDII, FRANCJI I POLSKI

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S T R E S Z C Z E N I E

W literaturze brak jest danych na temat postrzegania suszonych owoców i produktów je zawierających. Dlatego też określono preferencje konsumentów do tego rodzaju żywności w różnych kontekstach konsumpcji. Dane były zebrane przez Internet w formie kwestionariusza rozesłanego do 1092 holenderskich, francuskich i polskich respondentów.

Uzyskane wyniki wskazują, że suszone owoce oraz produkty je zawierające są konsumowane raczej okazjonalnie, a tego rodzaju produkty są bardziej popularne wśród polskich niż wśród holenderskich czy francuskich respondentów. Polacy najczęściej deklarowali, że jadają suszone owoce raz na dzień bądź kilka razy na tydzień. Pomimo, że 58,3% holenderskich konsumentów twierdziło, że nigdy nie jada suszonych owoców, 8,6% przyznało, że konsumują rodzynki raz na dzień. Co więcej

rodzynki były najbardziej preferowane nie tylko wśród Holendrów, lecz także wśród Francuzów i Polaków. Płatki śniadaniowe były natomiast jednym z najczęściej spożywanych produktów zawierających suszone owoce wśród wszystkich trzech narodowości biorących udział w badaniu.

Jeśli chodzi o moment konsumpcji, to Holendrzy i Francuzi deklarowali spożywanie suszonych owoców głównie rano. Polacy byli zgodni, że jadają ten produkt po południu i wieczorem. Francuscy i holenderscy respondenci pytani o sposób, w jaki konsumują suszone owoce (część głównego posiłku czy przekąska) byli raczej niezdecydowani, podczas gdy Polacy twierdzili, że preferują formę przekąski. Wszystkie trzy narodowości były bardziej skłonne spożywać suszone owoce oraz produkty je zawierające w domu niż poza domem. Polscy respondenci w przeciwieństwie do Francuzów czy Holendrów deklarowali spożywanie suszonych owoców podczas oglądania telewizji.

Słowa kluczowe: suszone owoce, produkty zawierające suszone owoce, konsumpcja, kontekst konsumpcji, preferencje