

## USE OF ORGANIC VEGETABLES IN TYPICAL DISHES OF JAPANESE CUISINE<sup>†</sup>

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### ABSTRACT

Recent studies have shown that organic food is safer and healthier than common food since the former is cultivated without any chemical fertilizers. Research at the Universidade Federal de Lavras, Brazil, has revealed that lettuce with organic fertilizers contains higher concentrations of phosphorus, potassium and magnesium when compared to lettuce with conventional fertilization. Research by the National Program in the Enhancement of Family Agriculture (PRONAF) has indicated higher nutritional rates in vegetables cultivated organically. Current paper is a statistical analysis on the consumption of Yakisoba (with organic products) at the trade fair in Presidente Prudente SP Brazil and identifies consumers' knowledge on these organic products. Most yakisoba consumers are unaware of the organic products involved or believe that they are merely natural products, such as legumes, fruits and vegetables. People should be made aware of the importance of the products and their assets so that a higher demand may be established, production may be encouraged and their availability made possible at an affordable price for a larger number of people.

**Keywords:** organic products, health, consumption.

## UTILIZAÇÃO DE HORTALIÇAS ORGÂNICAS EM PRATOS TÍPICOS DA CULINÁRIA JAPONESA

### RESUMO

Em estudos realizados verificou-se que os orgânicos são mais seguros e mais saudáveis que os alimentos normais, pois são cultivados sem fertilizantes químicos ou agrotóxicos. Pesquisas na Universidade Federal de Lavras encontraram em alfaces adubadas com adubo orgânico, concentrações maiores de fósforo, potássio e magnésio, quando comparados com a alface submetida à adubação convencional. A pesquisa, realizada pelo PRONAF (Programa Nacional de Fortalecimento da Agricultura Familiar), apontou uma superioridade nutricional nas

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hortaliças cultivadas organicamente. O presente trabalho faz uma análise estatística do consumo de Yakissoba (com produtos orgânicos) da principal feira de Presidente Prudente e identifica o conhecimento de consumidores sobre estes produtos orgânicos. Os resultados da pesquisa demonstraram que a maioria dos consumidores de Yakissoba não tem conhecimento sobre os produtos orgânicos ou acreditam que estes produtos sejam apenas naturais, como legumes, frutas, hortaliças. Conclui-se que há necessidade de esclarecer à população sobre esses produtos e seus benefícios, para criar uma demanda, incentivar o aumento de produção, e conseqüentemente a disponibilidade a um preço acessível para um número maior de pessoas.

**Palavras-chave:** orgânicos, saúde, consumo.

## INTRODUCTION

Food is a primary factor for the basic nutritional needs of the human body since it triggers growth, development, learning and schooling performance, coupled to a prophylaxis against nutritional deficiencies and infectious diseases. Fruits, legumes and vegetables are the main sources of micronutrients, fibers and nutrients that improve the organism's defense and promote the formation of healthy eating habits. The imbalanced consumption of food may cause liabilities to health, such as obesity, diabetes, high blood pressure, anorexia, anemia and other diseases that attack people in all age brackets (SARAIVA, 2006).

Due to modern living, more and more people lunch in restaurants and food outlets. It has been estimated that one in five meals occurs outside the home (FONSECA; MANFRIDINI, 2010).

The decrease of Brazilian traditional food in people's diet, such as rice, beans, manioc and maize flour, to substitute industrialized fast food, is part and parcel to the daily life of millions of Brazilian. It represents modern globalized attitudes and disseminated by the desire to have unlimited consumption. The idea of the superiority of technical and scientific knowledge has facilitated the introduction of these new products in the country (BLEIL, 1998).

Ready-made products for immediate consumption or fast-foods are numerous (VAN'T RIET et al., 2013; FORSYTH et al., 2013; WRIGHT et al., 2013). Yakissoba,

Chinese in origin, is very common in Japanese cuisine. It literally means fried buckwheat. This internationally renowned food is composed of legumes and vegetables that may be fried together with noodles, to which meat is added (GAUDIOSO; SOARES, 2013).

Yakissoba is prepared with several legumes and may be adapted to the taste of each person, with values varying according to the legumes used. The latter may be carrots, bell pepper, onions, broccolis, cauliflower, cabbage or Swiss chard, celery and other legumes that make the food more colorful.

Since concern with a rich diet in vegetables, legumes and fruits is a guarantee of a good quality of life, the irrational use of pesticides, food's origin and the way this food was produced are highly relevant issues. The establishment of organic products on the market is an alternative for the problems mentioned above.

Organic food is vegetable or animal-derived products, free from pesticides or any other chemical product. They are replaced by cultivated products that establish the ecological balance within the agricultural system (BATALLHA; BUAINAIN, 2007).

The term *organic* identifies a food production pattern without the use of chemical products, fertilizers, genetically modified organisms without debating agroecology as a scientific discipline or discussing ecological, biodynamic, natural,

sustainable, degenerative, biological or permaculture products (MEDAETS; FONSECA, 2005).

Studies by Lee & Yun (2014) showed that the empirical investigation of supermarket clients who buy organic products revealed key antecedents of consumers foregrounded on perceptions of nutritional contents, ecological welfare, sensorial attractiveness and prices. The above attitudes affect their behavioral intentions to buy organic food.

Health has become an important social and personal value. Due to the costs of curative medicine, the prevention of health problems has been highly appreciated.

## MATERIALS AND METHODS

Data collection occurred in the main trade fair in Presidente Prudente, a city in the west of the state of São Paulo, Brazil, during two months, in which interviews with yakisoba consumers were undertaken. Data comprised the application of several questions to analyze consumers' profile and intake.

Statistical data were produced based on the population of the Presidente Prudente region and the average for population sampling was calculated in finite population by the expression below:

$$n = \frac{Z^2 \cdot p \cdot q \cdot N}{Z^2 \cdot p \cdot q + e^2 \cdot (N - 1)}$$

## RESULTS AND DISCUSSION

Research results comprised the people's reasons for consuming yakisoba, especially taste and health concerns, as mentioned above with regard to proper food taking.

Complaints on health have been related to current civilization modes which a healthier life style may modify this situation (GOETZKE et al., 2014).

Current assay evaluates the consumption of yakisoba in the main trade fair of Presidente Prudente SP Brazil, the most important commercial center in the western region of the state of São Paulo, Brazil. A statistical study has been prepared to identify whether consumers are ready to use organic products in the preparation of this type of food, with higher costs. Knowledge on organic products by the population and their acceptance are also evaluated.

where  $Z^2$  is the confirmation index of the sample = 95%;  $p$  is the probability of occurrence of hit = 50%;  $N$  is the number of yakisoba clients = 60;  $q$  is the probability of occurrence of error = 50%;  $e^2$  = error = 10%

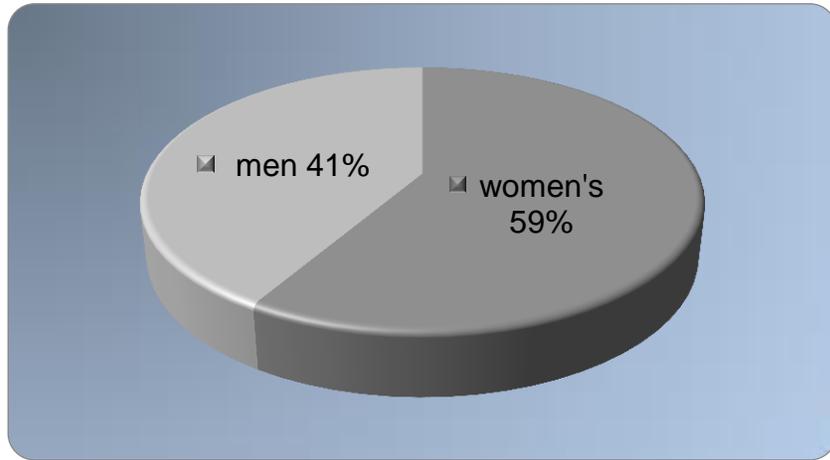
Confidence level was set at 95%; error estimated at 10%; proportions of 0.50 for  $p$ .

$$n = \frac{1.96^2 \cdot 0.25 \cdot 0.25 \cdot 60}{1.96^2 \cdot 0.25 \cdot 0.25 + 0.1^2 \cdot (60 - 1)} \Rightarrow$$

$$n = \frac{14.406}{0.8301} \Rightarrow n \cong 18$$

Twenty persons were randomly selected at the main trade fair in Presidente Prudente, Brazil, for the interview.

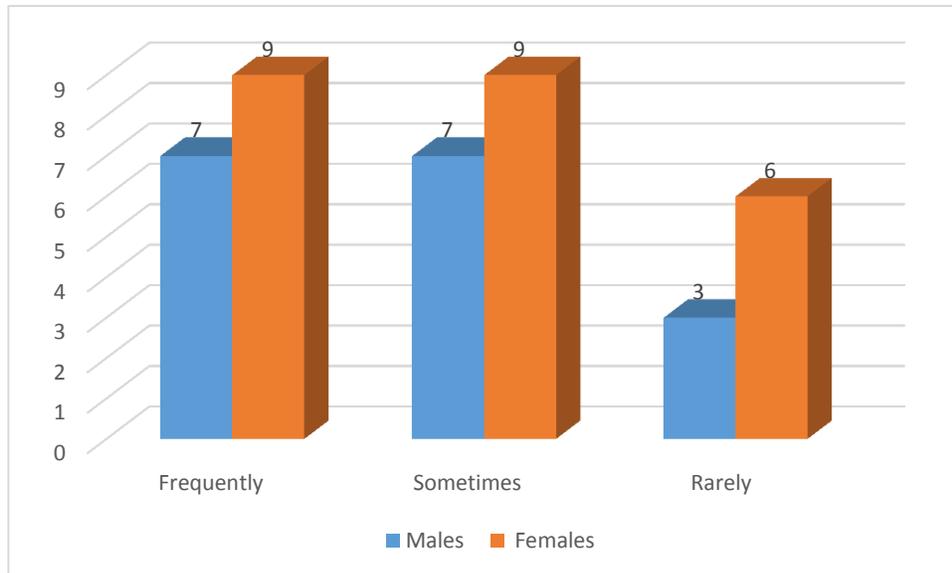
Figure 1 shows that females composed 59% of the sample, whereas males were 41%.



**FIGURE 1** – Percentage of interviewed people in the trade fair of the city of Presidente Prudente SP Brazil.

Interviews showed that 39.5% go once a week to the fair to eat yakisoba; 39.5% eat it once a month; 21% eat yakisoba once in every two or three months.

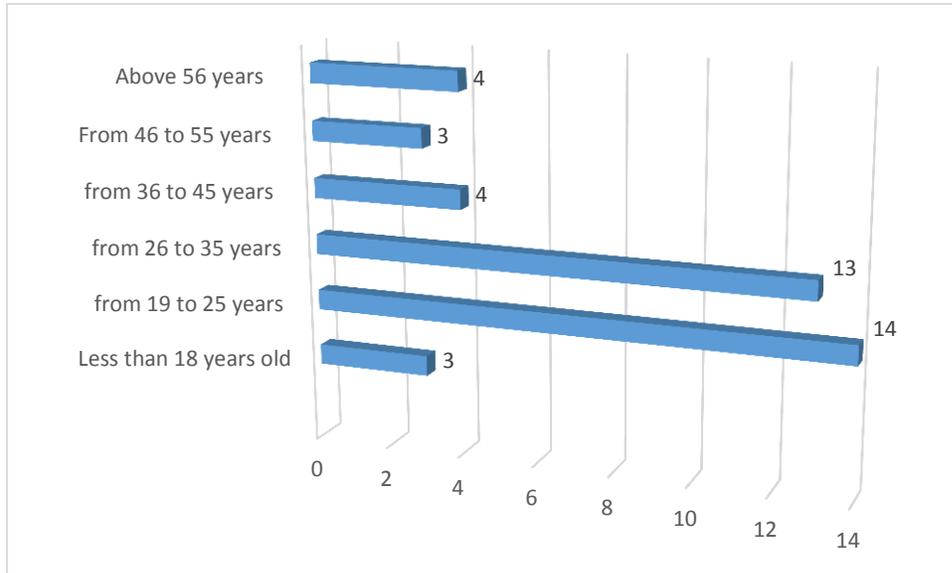
Further, 56% of weekly yakisoba consumers at the fair are females. The relationship between people who eat yakisoba once every two or three months is given by females, at 66.5% (Figure 2).



**FIGURE 2** – Frequency of males and females consuming yakisoba.

According to results of current research, the above are regular clients that warrant almost 40% of weekly sales. Figure

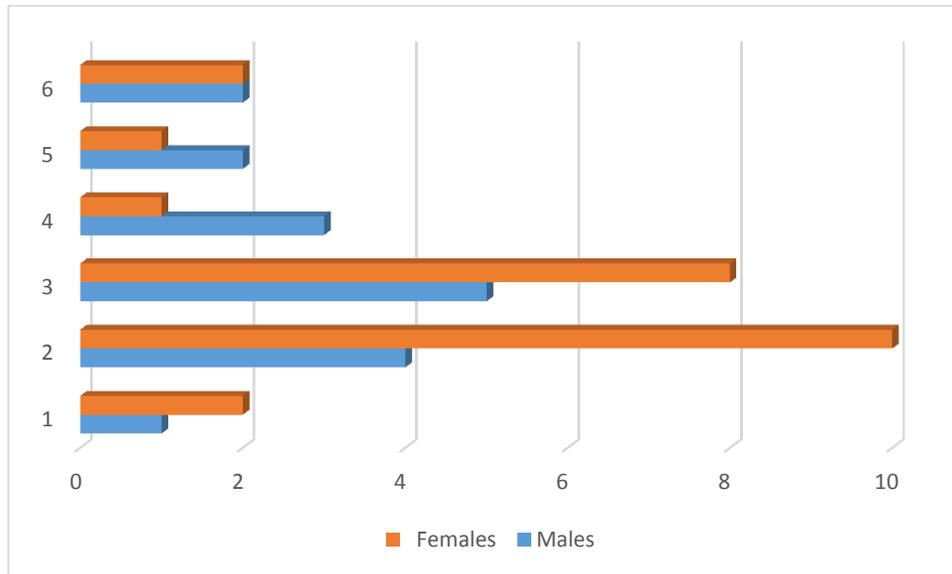
3 gives the age bracket of the interviewed and shows that 66% are between 19 and 35 years old.



**FIGURE 3** – Interviewed according to age bracket in the fair in Presidente Prudente SP Brazil

Figure 4 shows that males and females belong to the same age bracket and that most

males between 26 and 35 years old consume yakisoba.



**FIGURE 4** – Age bracket of males and females who consume yakisoba.

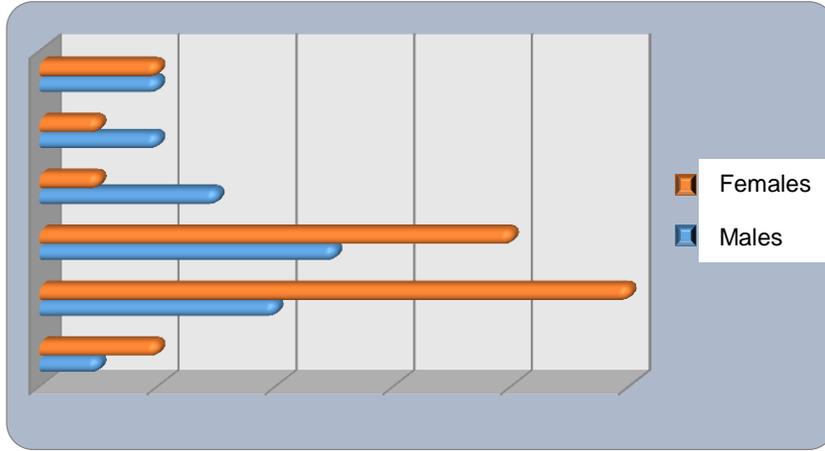
Age bracket of yakisoba consumers may be also defined by the second main consumption reason, or rather, concern with health and physical appearance. Since yakisoba is a food with great amounts of legumes, the idea of health and low calorie rates is underlined. In fact, people of this age

bracket have to eat outside their homes and seek differentiated and ready-made food which may be consumed in a rather relaxed environment.

Earnings of yakisoba consumers are also investigated to see whether its price may be a hindrance. Most consumers have a

family earning between three and four Brazilian minimum wages.

Most males that consume yakisoba earn more than five minimum wages (Figure 5).

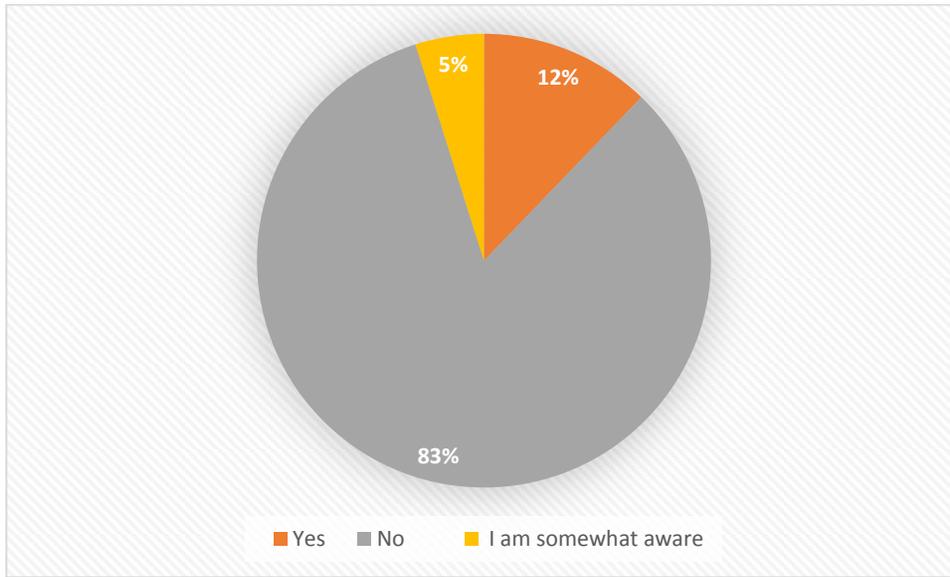


**FIGURE 5** – Family earnings of males and females who consume yakisoba.

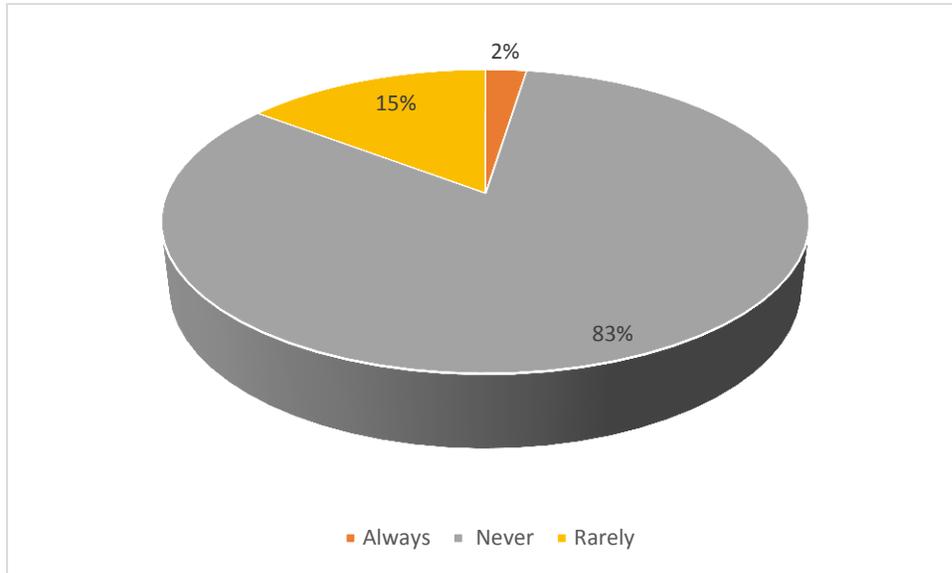
According to research, consumers' average earnings are rather high. In other words, it is a population that consumes food not merely for its physical needs but for hedonic satisfaction and health concerns.

The interviewed people's knowledge on organic products is low as 12%. They are

animal or vegetable-derived products, free from pesticides or any other chemical product, featuring quality and the closest attributes to natural products (Figure 6). Research also revealed that most (83%) never consumed these products (Figure 7).



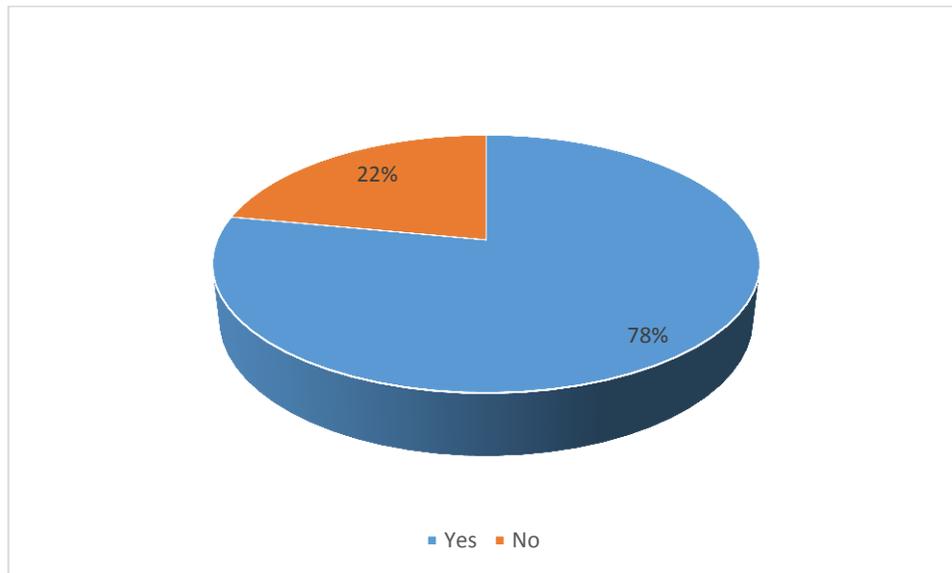
**FIGURE 6** – Knowledge on organic products



**FIGURE 7** – Consumption of organic products

It has to be underscored (Figure 8) that, although most interviewed are not aware of what are organic products, they

imagine that they are better and healthier products.



**FIGURE 8** – Will to pay more for organic products

Paying for yakisoba at a higher price is an issue that has to be analyzed, even though consumers' average earnings are high. In fact, 78% of the interviewed consumers were willing to pay more for organic yakisoba and most would pay twice as much, totaling

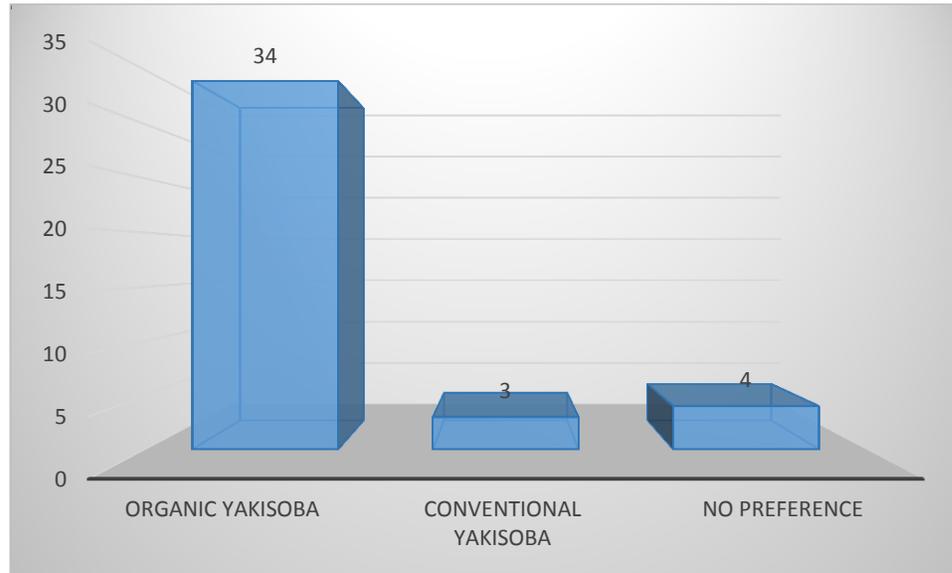
94%. Only 6% would pay three times as much since they are aware that it is a product with high aggregated value. Therefore, organic yakisoba is highly acceptable even though the cost of the products should be decreased so that it would be made available

to low-waged people without any financial liabilities to producers.

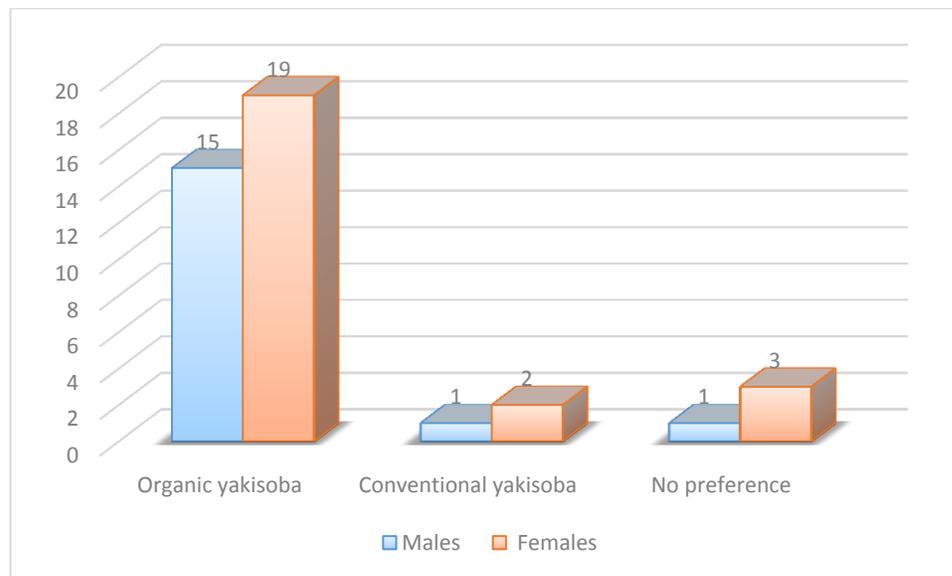
A hypothesis was raised in which yakisoba prepared with organic products would be sold at the same price as the conventional one. However, 83% of the

interviewed people would prefer organic yakisoba (Figure 9).

Figure 10 shows that females and males prefer organic yakisoba and all agree that organic products are better than conventional ones.



**FIGURE 9** – Preference for conventional and organic yakisoba



**FIGURE 10** – Male and female preference for organic and conventional yakisoba

Current research shows that, although 83% of the interviewed consumers fail to understand what are products of high quality and value, another 83% prefer these products. Results reveal that when a greater

awareness of the products' benefits occurs, higher numbers would result. Likewise, the will to pay more for these products. When males and females are compared, 88% of

males and 79% of females would consume organic yakisoba.

The second stage of current research assessed the taste of yakisoba with organic products and that with non-organic ones. Consumers were provided with an initial portion of yakisoba prepared with organic products. When consumers were asked if they perceived any difference in taste, 58% revealed that they were aware that taste and consistency were different and better.

The same consumers then received two small portions, of which one comprised yakisoba with non-organic products and the other with yakisoba with organic products. Thirty-five percent did not perceive the difference and 15% perceived the difference between the portions. Yakisoba prepared with organic products was better assessed.

## **CONCLUSION**

Research revealed that there is greater concern with health issues which include changes in Brazilian eating habits. There is a concern to consume quality food with greater nutritional properties, such as fruits and legumes. On the other hand, taking fast-foods has become a rather common habit too.

Yakisoba, as food alternative found in events with Oriental flavor, is now highly appreciated in restaurants. Yakisoba consumers in the main fair in Presidente Prudente in the western region of the state of São Paulo, Brazil, are clients that appreciate taste and are concerned with health. However, most are unaware of non-organic products that may replace legumes cultivated in the traditional manner with high rates of pesticides.

Most interviewed people think that organic products are vegetables, fruits and

They perceived that the products in organic yakisoba were taster and more consistent: 50% of the interviewed were aware of certain differences even though they could not evaluate what modified the food. Only 23% out of 50% assessed that the food prepared with non-organic products was better.

Another type of research was conducted on another occasion, or rather, two types of yakisoba were sold and higher costs of the organic products were provided. Organic yakisoba was set at double the price whereas yakisoba with non-organic products was sold at the conventional price. In this case, 91% of the interviewed chose the yakisoba with non-organic products. All confessed that costs affected their decision.

legumes and believe they are feeding themselves well. They cannot imagine that, in spite of eating natural and non-industrialized products, they are also intaking a great amount of pesticides used in the production process.

There is no difference in knowledge among consumers, either by gender or earnings. Schooling, however, is a factor that helps consumers to understand the difference between organic and conventional products so that they may opt for the better food.

Greater knowledge on the amount of pesticides in conventional products should be disseminated so that people may become aware of organic products and consume them more. This fact would increase demand for these products and, consequently, an enhancement for producers of organic products.

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