Historically, horses had been slaughtered at the end of their working lives, and their meat had no desirable organoleptic and nutritional characteristics (Stanislawczyk and Znamirowska, 2005; Lorenzo et al., 2010). In recent years, horsemeat become more popular and has a great potential as an alternative meat in human consumption. The quality of horsemeat is recognized so the animals are specifically raised for human consumption. The animals are slaughtered at younger ages, mainly as offsprings. Usually, they are weaned on natural pastures and then finished in a stall (on concentrates and hay), or they are at pastures until they reach predetermined slaughter weight. Although its consumption is much lower than the other types of meat, which are more commonly used in human diet (pork, beef or chicken), it has been shown that the attitude towards horsemeat has changed and the consumers are interested in tasting new meat products (Sarríes and Beriain, 2006). Compared to the other meat producing species like pork, poultry, beef, sheep, and goat, current horsemeat production represents only 0.24% of the total Worlds production (FAOSTAT, 2016).

Production by continents for the year 2016 shows that 53.7% of horses is produced in America, 25.6% in Asia, 10.7% in Africa, 9.4% in Europe and 0.7% in Oceania (FAOSTAT, 2016). Considering worldwide horsemeat trade, the main importing countries for the year 2016 are Mexico, Canada, Italy and Spain, while United States of America, Canada, France and Poland are the main exporting countries (FAOSTAT, 2016). Worldwide production of horsemeat for the year 2016 was 737874 tonnes from which the Europe participated with only 122306 tonnes, respectively (FAOSTAT, 2016).

The purchase and consumption of meat is determined by consumer habits that are largely influenced with religion, tradition and customs (Kearney, 2010). Beside of that, it must be considered that horsemeat is a specific type of meat recognizable by the following physicochemical properties and nutritive profile.

The horsemeat is recognized by its dark color that changes to a brown/black with a bluish tinge on exposure to air. It is rich in myoglobin and has high ability to combine with oxygen so the oxidation is accelerated, i.e. bright red color is transformed (oxidize) to brown color. Carcass cuts and tissue composition depends on the anatomical position of the each cut and dissection procedures (Lorenzo et al., 2014a). High suitability of horses for meat production is reflected throughout excellent dressing percentages that are close to 70% in meat yield (Juarez et al., 2009). In contrast to the other species, carcass evaluation is not correctly, because there is no carcass classification system on horses used for meat consumption. This classification system could provide equalized quality determination of horsemeat so in the closest future producers, suppliers and consumers must be included in its establishing and implementation. Compared with a beef carcass, horses have a higher percentage easily trimmed off subcutaneous and body cavity fat and a lower percentage of intermuscular and intramuscular fat (Rossier and Berger, 1988). With a small content of intramuscular fat and its low melting temperature, juiciness of a horsemeat does not differ much from the other meats (Kondratowicz and Kowalko, 2001; Kondratowicz, 2002). Horsemeat is recognizable with its sweetish taste, which is mainly due to the high glycogen content (Litwińczuk et al., 2008).
Furthermore, horsemeat is characterized by a relatively good water-holding capacity (Kondratowicz and Kowafko, 2001; Konratowicz, 2002). Generally, it is considered that compared to the other species horsemeat is a tender. However, currently there is no texture classification available for horsemeat. The most commonly used method for texture classification for horsemeat is based on instrumental Warner-Bratzler shear force values (WBSF). The tenderness classification categories suggested by Belew et al. (2003) in beef steaks that are used also for horsemeat are as follows: ‘very tender’ WBSF <3.2; ‘tender’ 3.2 <WBS<3.9; ‘intermediate’ 3.9 <WBS<4.6; ‘tough’ WBSF>4.6. The literature reports on WBSF for horsemeat vary from 2.1 kg/cm² (Lorenzo et al., 2014b) to 7.7 kg/cm² (Litwińczuk et al., 2008), and therefore horsemeat tenderness can range from a ‘very tender’ up to ‘tough’.

The nutritional characteristics reveal that the horsemeat has beneficial effect on human health (Lorenzo et al., 2014a) so today’s health conscious consumers are more and more interested in its consumption.

Horsemeat is described as a dietetic mainly due to its low fat content and favorable dietetic fatty acid profile, with a high content of polyunsaturated fatty acids. Fat from this meat type is more digestible than that from lamb and beef, and contains a greater proportion of components from the α-linolenic fatty acid family (Levine, 1988; Lorenzo et al., 2014b). The proportion of unsaturated fatty acids relative to saturated acids is above the recommended value (>0.4) for humans (Lorenzo, 2013; Seong et al., 2016). Additionally, n-6/n-3 ratio is also within the nutritional recommendations (< 4) for human health (Domínguez et al., 2015; Seong et al., 2016). With a low cholesterol content (from 55.76 mg/100 g to 79.50 mg/100 g), consumption of horsemeat may contribute in reducing total and LDL cholesterol content in humans (Del Bò et al., 2013; Seong et al., 2016).

Regarding chemical composition, horsemeat is low in fat and high in protein and haem iron (Badiani et al., 1997). The values are highly variable and for intramuscular fat content in range from 0.15 % (Franco et al., 2013) to 6.63 % (Badiani et al., 1997), protein content from 19.57 % (Tateo et al., 2008) to 22.31 % (Lorenzo et al., 2013). Moisture content is in range from 68.34 % to 77.40 % (Serriés and Beriain, 2005) and ash content from 0.98 % (Badiani et al., 1997) to 4.03 % (Serriés and Beriain, 2005).

Due to the essential amino acids, in an appropriate proportion horsemeat is an excellent source of proteins with a high biological value (Lorenzo and Pateiro, 2013). The essential amino acids with the highest proportion in horsemeat are lysine (from 1.37 to 1.93 g/100 g) and leucine (from 1.45 to 2.04 g/100 g), respectively (Lorenzo et al., 2014a). It is indicated that 100 g of horsemeat could cover about 15.5% of daily requirement for essential amino acids (Lorenzo et al., 2013). Among the non-essential amino acids, glutamic acid (from 2.62 to 3.41 g/100g), aspartic acid (from 1.66 to 2.10 g/100g) and alanine (from 1.09 to 1.33 g/100g) are the ones with the highest proportion (Lorenzo et al., 2014a).

Horsemeat is also an important source of minerals. Among the major elements, Lorenzo and Pateiro (2013) reported that concentration of potassium is generally higher (K, from 190.77 to 202.61 mg/100 g) than in the others. It is followed by phosphorous (P, from 186.20 to 196.50 mg/100 g), sodium (Na, from 52.56 to 68.08 mg/100 g), magnesium (Mg, from 38.70 to 43.31 mg/100 g), and calcium (Ca, from 4.11 to 4.51 mg/100 g). Regarding minor elements, iron (Fe), manganese (Mn), and copper (Cu) are among vital ones for maintaining human health. The concentrations of Fe are in range from 2.56 to 4.04 mg/100g, whereas for Cu from 0.135 to 0.213 mg/100g, and for Mn from 0.010 to 0.016 mg/100g. Compared to the other types of meat, horsemeat has a higher Fe content, and one portion (175 g) could provide one-third of daily-recommended dietary intake (Del Bò et al., 2013). Since the Fe deficiency is the most common nutritional disorder in the world, horsemeat could contribute to enhancement of Fe concentrations in humans.
Taking into consider mentioned, horsemeat is starting to be more appreciated and validated by consumers. Nowadays, when consumers are seeking for new alternatives in meats, horsemeat production and processing has numerous advantages. Therefore, commercialization of horsemeat presents a challenge for producers and sellers.

Although not jet comparable to the other meats there are some positive examples of horsemeat popularization and commercialization. As a good example of horsemeat processing plant there is a recognizable company in Slovenia named ‘Hot Horse’. ‘Hot Horse’ is dealing with horsemeat processing, fast foods, and delicatessen trade. The company was created in 1990 from the idea of a healthy fast diet. They wanted to offer new, tasty and high quality products with high nutritional value on the market, which would be both affordable and fresh every day. ‘Hot Horse’ is the only Slovenian fast food chain that has demonstrated the success of its business concept with over a decade and popularity with a strong market position.

The essence and heart of ‘Hot Horse’ products is from the very beginning in a horsemeat of their own production and of Slovenian origin. The routine slaughtering practice is followed by post mortem processing of horsemeat in the specialized commercial ‘Hot Horse’ butchery. The usual long-term practice by butchers of the processing plant for horsemeat is to market it when the meat has been aged for 14 days. Kaić et al. (2017) investigated horsemeat quality according to usual ‘Hot Horse’ practice and it was confirmed that their butchers could continue it and the meat could be classified as a tender.

In 1995, they opened the first and still active small market in Ljubljana, in the Tivoli Park, which quickly transformed the fast food from horsemeat into a real trend. The brand ‘Hot Horse’ has become the concept of a quality horsemeat burger. The essence and heart of their products is from the very beginning in a horsemeat of their own processing, which in different variations is served together with freshly baked bread, juicy vegetables and various spreads and side dish that are also produced in their own concept. Beside of that, in a last few years they found that the customers are also more interested for precooked fresh and healthy meals. Therefore, it was logical for ‘Hot Horse’ to start preparing raw ingredients as for the fast food chain and to offer the customers different kinds of meals in delicatessen shop and via on-line shop. Costumers do not spend too much time (about one quarter hour) to prepare fresh and healthy meal for their family and are very satisfied with this type of food supply.

What are the key features of ‘Hot Horse’ products?

• Healthy fast food: all products are based on horsemeat of Slovenian origin and their own processing; the horsemeat products are served together with freshly baked bread (that is almost completely without additives) and with fresh unprocessed vegetables.
• High quality and freshness: every component of products must be of high quality, which is also achieved through the daily supply of all key ingredients.
• Customer satisfaction: all efforts are aiming in ensuring that the customer is satisfied and that he is returning, while at the same time he can make his own meal according to his wishes.
• Accessibility: serving the customers throughout the all year providing products with affordability and excellent value (quality and quantity) for the price.
• Tidiness and cleanliness: they follow the high standards of orderliness and cleanliness of the point of sale.
Literature:


