ITALIAN DELI MEATS

A journey through flavour, renewed nutritional quality and health benefits of a symbol of Italian culinary art

Summary

First english edition: November 2011

Editorial project, editorial co-ordination and graphics:
Sprim Italia Srl, Via Brisa 3, 20123 Milano

Archive photo:
ISIT, IVSI reference
Shutterstock, iStockphoto

Introduction

The processing of pork meats has a long heritage, starting from the Ancient Romans, and which today still gives rise to an enormous variety of products with unmistakable flavour that are served on tables worldwide. These products are realised with the highest quality and safety standards, but still using the consolidated techniques passed down through the generations by the expert hands of the artisans. Italian deli meats, which therefore constitute a food category spanning nutrition and culture, can only be made in this way.

The preservation of meat, hard to find in the past and easily perishable, was developed to respond to the requirement of providing a foodstuff, important from a nutritional point of view, through time. At the same time, it preserves all of the qualities and precious nutrients in the best possible way and for as long as possible. Preservation has developed through the centuries, especially from the industrial age, developing many products with high process content. These are obtained via different production techniques, both regarding impact on the raw material and level of processing, the ingredients and preservation methods used and the nutritional and organoleptic quality. Italian deli meats lie within this category, among the most consumed products of animal origin after milk and derivatives, appreciated by consumers of all ages.

Thanks to careful selection of the raw material and the care taken in all of the production phases, Italian deli meats express the art of the Italian dietary tradition in a product; from the organoleptic qualities and the authentic nutritional profile, able to group NUTRITION, FLAVOUR, SAFETY, and PRACTICALITY together, always with respect to the centuries-old tradition of artisan production.

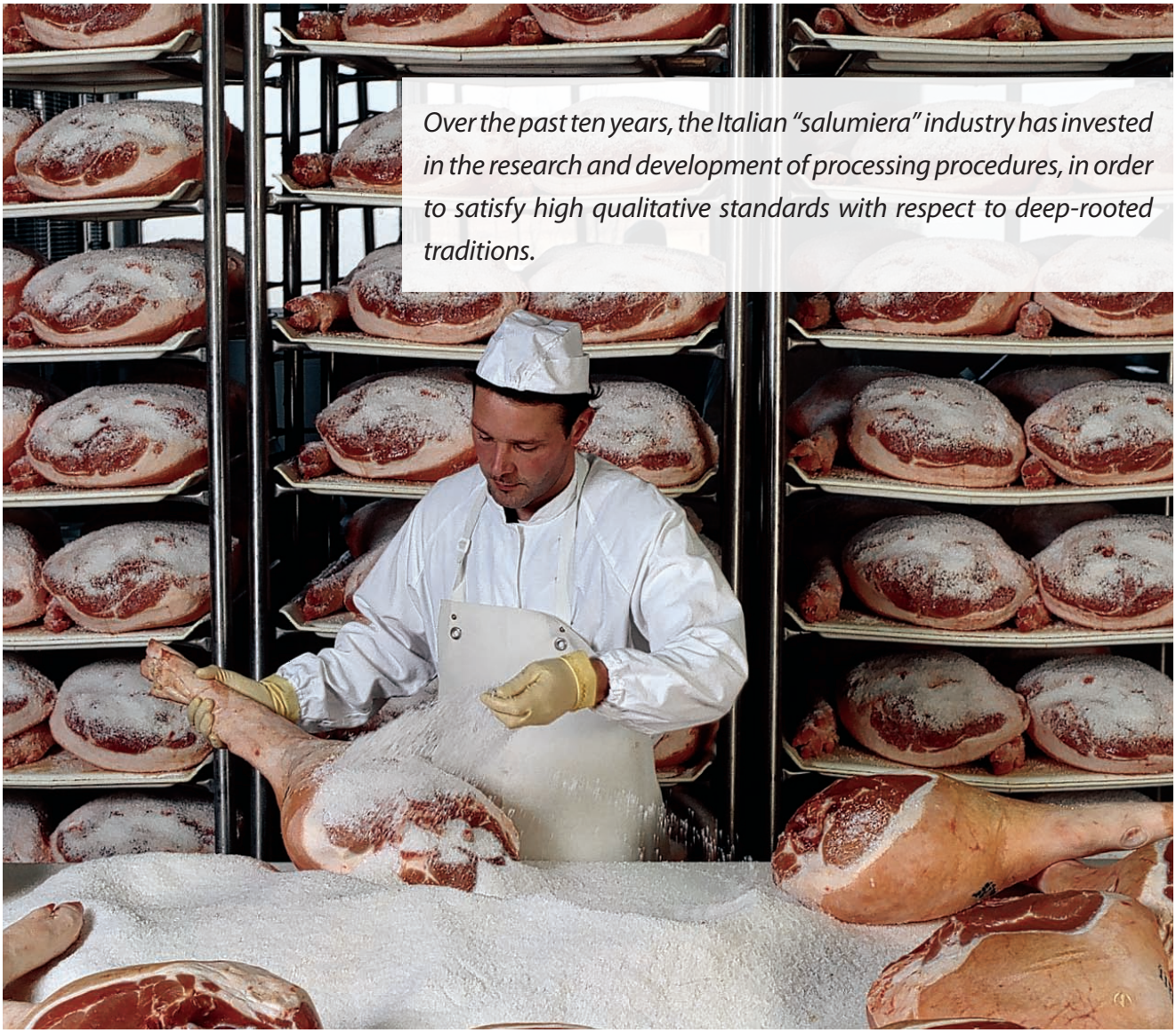
The current nutritional profile of Italian deli meats has 'advanced' with respect to the past and is more in line with modern nutritional requirements. Stock farming– subject to strict sanitary and veterinary controls and run in a way to give the animals large spaces to move around along with a targeted diet – and the 'gentle' production techniques, the merit of a processing industry that is always aware of customer needs and ready to face up to modern nutritional challenges, have contributed greatly to this improvement. New analyses have been performed in order to give figures to the scientific community and the consumers regarding the continuous composition evolution of Italian deli meats. This has also been extended to some often essential nutritional components, characteristic of deli meats, for which no analytic data was available and which have allowed to update nutritional values.

This new data allows to re-evaluate the role of Italian deli meats within a correct diet, in times in which there is an unprecedented, marked interest in subjects that link diet and health. The consumer's growing awareness, stimulated by increasing scientific evidence and the continuous attention to these subjects by the institutions – and consequently the media – has given a great incentive for the research and development of nutrition, thus defining main guidelines. The consumer's current dietary choices are also affected by these criteria, which were previously not greatly considered, especially in relation to a decidedly less active life style with respect to past generations. On the other hand, the food industry has committed to continuous research for improvement that should allow the population's new nutritional requirements to be satisfied, at the same time trying to preserve the traditional flavour and quality of the products. Many challenges have been faced in this continuous evolution scenario. Finally, the new European Standard regarding nutritional claims has also highlighted subjects relative to the composition of foodstuffs and the incidence of intake of the various nutrients on public health. This confers greater objectivity to the nutritional and health indications borne by the food products, with relative impact on the competitiveness of the same and on the dietary choice of the consumers, who are now more informed and protected in their purchases, with the aim of giving them the possibility to follow a healthy diet.

The updating and disclosure of the new nutritional values of deli meats to the scientific community and the consumer is indispensable so they have the correct information, thus making it possible for them respectively to implement the most suitable nutritional recommendations and to make informed dietary choices; therefore supplying an important instrument for the attainment of a healthy and balanced diet.

THE PRODUCTION CHAIN: FROM THE RAW MATERIAL TO MODERN PRODUCTION SYSTEMS

From the first deli meats, produced since prehistoric ages, up to today, the processing and preservation technique of meat has undergone great technological advancements while maintaining a strong link with the gastronomic traditions rooted in the Italian peninsular. This is due to the fact that innovations must allow the consumer's requirements to be respected in terms of flavour and tradition, as well as the regulations to which the typical process of the places of origin are strictly subjected, not to mention modern nutritional requirements.



Over the past ten years, the Italian "salumiera" industry has invested in the research and development of processing procedures, in order to satisfy high qualitative standards with respect to deep-rooted traditions.

A HISTORICAL TRADITION FROM THE ARTISAN TO INDUSTRY

If, in years gone by, the processing of pork into valued deli meats was the game of skilled artisans, custodians of an art perfected through the generations and passed down from father to son, today, no matter how much it is still present in limited family environments, **the artisan reality has progressively developed into a industry of "salumiera" considerate of the culture from which it derives.** With respect for tradition and often also bound by the presence of strict production specifications that characterise PDO and PGI deli meats, the industrial world **has known how to make the best of the margins of improvement and the technological and distribution challenges,** where possible **increasing quality and safety, in line with the requirements of modern lifestyles.** Even if the most recent technologies have favoured the appearance of some new products on the market, **most of the production and relative consumption of deli meats in Italy is relevant to those that can be defined as 'traditional'.**

Developed to respond to the necessity to preserve a foodstuff such as meat, important from a nutritional point of view and which in the past was difficult to find and easily perishable, **the art of the Italian "salumeria" is made up mainly of products prepared though salting and drying**, not however without exceptions, such as the **cooked products** (e.g. prosciutto cotto, mortadella, zampone and cotechino) and **speck**. Elsewhere, and especially in Mainland Europe, cooking, smoking or fermentation procedures in humid environments are widespread: these diversities are easily attributed to differences of a geographical, meteorological and cultural nature.

In spite of the **selection and control of the raw materials** used, the technical aspect linked to the **recipe** and the **production procedures used** play an unquestionable part in the production of quality deli meats. Without a doubt, this must be taken into consideration for the final composition of the different products, regarding the organoleptic features and the nutritional values.

The different types of products existing in Italy can be essentially grouped into **two macrocategories**: that regarding **matured cured products** and that regarding **cooked products**.

Matured cured deli meats

The deli meats maturing process is essentially based on **three interconnecting phases:** the **spreading of salt, the evaporation of water** and the **variation of acidity.** The different preparation techniques are the basis of the **division of these matured products into two large categories:** those made up from whole anatomic fractions and those based on minced meat. Amongst the first group of **matured 'whole pieces'**, we consider the various productions of **prosciutto crudo**, one of the best known and widespread in Italy and throughout the world, **culatello, coppa** and **pancetta, speck** and **bresaola**, the latter being peculiar because it is made using beef and sometimes horse meat but never pork.
Regarding the **minced meat-based matured** products, reference is mainly made to **salami** which, even though having **variability in the preparation of the mixture** and in maturing conditions, have several technologies and preparation that are common to all deli meats: following the preparation of the mixture, it is filled into natural or artificial gut casings and left to mature in appropriate thermo-hygrometric conditions.

Prosciutto crudo: one of the oldest Italian deli meats, produced already by the Romans, who left the first written descriptions. Italian tradition envisions the use of large legs in order to obtain more mature meet containing less water. The simple processing consists in a true and proper "rite", whose ingredients are only salt, time and passion. "Piercing" is performed to check maturing: a horse bone needle is made to penetrate various points of the prosciutto by experts trained to recognise and evaluate the olfactory characteristics: only the prosciutti crudi that pass this delicate test, when they have matured fully, are marked as PDO and PGI and can be served on tables worldwide, privileged evidence of the Italian culinary tradition. Italy boasts 7 PDO and 3 PGI prosciutti.

Culatello: legend says that this valued Italian deli meat exists due to an error: in XIV century, a clumsy norcino (pork butcher - specialized in curing and preserving pork meat) incorrectly deboned a prosciutto and, to solve the problem, salted and matured the meat. Since then, Zibello and other seven municipalities of the Parma lowlands (an area often shrouded in fog, an irreplaceable and determining climatic factor for the maturation of this deli meat) are famous for this gastronomic delight. Only the rear muscle of the upper part of the leg is used to make Culatello di Zibello PDO. Trimming and deboning are carried out by expert hands and governed by centuries-old tradition. After it has been salted and tied, the culatello is matured for about one year.

Coppa: the first historical documentation of the processing of this product date back to the Dark Ages. Two "coppe" are obtained from the neck muscles of each pig, which are salted and flavoured with different spices, of which pepper, ground cinnamon, cloves, bay seeds and nutmeg. White wine from the local hills is also added to the mixture used for Coppa Piacentina PDO, while chilli pepper can be used in the Capocollo di Calabria PDO. Temperature, humidity and ventilation of the different production areas also affect the biochemical phenomena responsible for the typical organoleptic features of this authentic deli meat.

Pancetta: made from the front part of the ribs of the pig (which has the characteristic alternation of fat and lean meats and the typical red and white striped appearance), salted by hand and matured for at least two months, it was already part of the diet of the Roman legionary and can be found in different locations under different names and shapes: strained, fenced, rolled up. It can be eaten as it is and as a base for some of the most famous Italian recipes. Pancetta Piacentina and Pancetta di Calabria have obtained the prestigious European PGI recognition.

Speck: is made from the combination of two preservation methods: smoking and salting, in order to obtain its balanced sweet and smoky flavour. Like prosciutto, it is obtained from the whole pig leg, deboned and trimmed to obtain the typical "baffe" and seasoned with a mixture of spices according to traditional family recipes, often passed down from father to son. Salt is used sparingly, without exceeding 5% in the finished product and resinous wood is never used for smoking. Maturing lasts about 22 weeks. Speck dell'Alto Adige, characterised by a moderately salty, spicy and smoked flavour obtained PGI recognition in 1996.

Bresaola: originates from the family tradition of preserving meats by salting and drying and it is produced using the best cuts of the leg of adult cattle reared according to the open-herding system. The raw material is dry salted, using a mixture of salt and flavourings (garlic, cinnamon, nutmeg, bay leaves, pepper, juniper berries, depending on the producer's recipe). Filled into natural casings, the bresaola is matured for a period 4 to 8 weeks, at the end of which it acquires its unmistakable flavour and aroma. Bresaola della Valtellina obtained European PGI recognition in 1996.

Salame: ancient product, it originates from the Middle Ages and spread quickly through all Italian regions, developing many local variations through the centuries. The best cuts of pork are used for its preparation, in particular the shoulder, to which different mixtures of flavourings are added that give each salame its unique flavour. The spices most commonly used are salt and pepper, but garlic, mace, juniper or myrtle berries, fennel, chilli pepper and red wine are also used. The mixtures are filled into gut casings of various dimensions, so much so that the weight of a salame can vary from 25 g to more than 5 kg. It is for these reasons that it is not easy to catalogue the hundreds of types of salame produced in Italy. Just remember that Italy boasts 7 PDO and 4 PGI products.

Cooked deli meats

Thanks to a **marked technological content** that always respects tradition, **the cooked deli meats fully reflect the developments and innovation** applied by the Italian "salumeria" industry. These can also be divided into two categories of goods: **whole and "insaccati" (encased).**
A symbol of cooked products, **starting from a whole muscle** is **prosciutto cotto.** If we consider the **cooked "insaccati",** without a doubt the 'prince' of products is **mortadella**, followed by **zampone** and **cotechino**. The **wurstel** also merits a mention, a cooked product which is today produced and eaten on a regular basis.

Prosciutto cotto: tender, delicate and versatile deli meat, it has relatively recent origins but has known how to win over Italians quickly, thanks to its many uses also in the kitchen, becoming one of the most sold and appreciated "salumeria" products. Top quality pig legs are used, they are massaged to favour the absorption of the flavourings (salt, pepper, bay leaves, juniper) and introduced into special moulds that determine the various shapes of the product. They are successively slowly and delicately steam cooked at a temperature of about 70° C, which gives the prosciutto cotto that unique harmony between the compactness of the slice, the right level of moisture and tenderness and also the delicate flavour.

Mortadella: its ancient origins date back to Roman times: the name derives from "Mortarium" (mortar bowl, the instrument used by our forefathers to grind the pork meat). Successively spreading to many areas in the north and centre of Italy, in 1998 Mortadella Bologna obtained the prestigious European PGI recognition. It is produced from a mixture of top quality pork meats. The lean part is made up from muscle, mainly shoulder; the fat lardons are from the throat area, the most valued. Cooking takes place in traditional dry air ovens and can last over two days for large mortadelle. This is the most delicate moment in the production process: only slow and delicate cooking can give the mortadella its typical flavour and aroma.

Zampone e cotechino: produced with an exclusive mixture of pork meats, added spices are salt, pepper, cinnamon, sometimes wine and other flavourings. The mixture is introduced into a gut casing or, for zampone, into the skin of the pig's front trotters. In fact, according to legend, zampone originated during a siege on the city of Mirandola in 1511 by Pope Julius II's troops, when the inhabitants filled the skin of pig's trotters with mixed pork meats in order to save all food resources, or perhaps to store them. The Zampone and Cotechino Modena, obtained European PGI recognition in 1999. They are sold almost exclusively pre-cooked in water or with steam.

A 2000 years old tradition

Pig breeding developed in Italy in the Po Valley in the Neolithic Period, initially to satisfy the family's necessities or those of the village. Later, in the Etruscan period, the first forms of stable breeding appeared and products also became a currency for commerce. In Roman times, the pig leg, transformed into prosciutto, became protagonist at social events and feasts; successively, deli meats became money of exchange for commercial transactions. With the passing of the centuries, production and consumption of deli meats progressively gained importance, passing from the triumphs of the Italian Renaissance period when the art of gastronomy developed and the banquets were increasingly more sumptuous, to the nineteenth century, when the first food laboratories and first "salumerie" spread through Italy and several Italian deli meats were coded definitively, many of which today are recognised and protected by the European Union.

Prehistory	wild pig cut into small parts dried in the sun or on the fire; salting and basic brine solutions; probable smoking
Egyptian and Greek Period (XIV - VIII cent. a. C.)	first "insaccati" made up from blood and fat; mainly family consumption
Etruscan - Roman Period (V cent. a. C. - VI cent. d. C.)	production of pork or wild boar legs preserved with different salts and maturing of "insaccati" and cured meats (lucaniche); family consumption; commerce
Lombard Period (IX -XII cent.)	new ways and rules of preservation; a few lines written for 'vulgar' connotation of the farming origin of the products
Monasticism (XI - XII cent.)	improvement of production techniques; addition of agricultural and dairy subproducts in the pig's diet
Renaissance (XIII - XV cent.)	first use of the nitrate; pig's diet with subproducts of cerial milling; constitution of the first quality regulations and sausage-makers and norcini corporations
American Period (XVI - XVIII cent.)	increase of "salumeria" productions due to the effect of the arrival of new vegetables from America, suitable for feeding pigs (potatoes and other tubers), with the development of territorial differences
Artisan Period (XIX cent. - first half of XX cent.)	improvement of traditional knowledge and start of the artisans; establishment of the "salumerie" shops. Development of modern processing and preservation methods
Industrial Period (second half of XX cent.)	mechanisation, appearance of cooling machines, control of work and maturing environments; industrialisation of the processes, recovery of typical productions
Post-industrial Period (XXI cent.)	recovery of products at risk of extinction; challenges of the global market and adaptation to modern life styles; traceability of the chain. Dietetic, bio, nutraceutic products

FIGURE 1. MAIN HISTORICAL STAGES IN "SALUMERIA"

CONTINUOUS IMPROVEMENT: COMMITMENT AND CHALLENGES OF THE ITALIAN PROCESSING INDUSTRY

Intelligent use of modern technology, able to assure a product with exemplary quality, has resulted in the **continuous improvement of production techniques** for Italian deli meats, **with respect to the cultural heritage and tradition** that characterise these products. For example, the time and temperature value programming and control technologies, with reference to maturing environments and ovens, have contributed to optimising and standardising the finished product at high levels, therefore also satisfying exemplary qualitative standards. **Respect of the strictest hygiene levels during production processes**, envisioned by a precise reference dietary regulatory framework, moreover allows to always guarantee the **high hygienic-sanitary quality** of the products. This is a public health factor that cannot be ignored, especially in times characterised by great attention to the safety of food products.

These excellent technical factors, combined with the **particular geographical position of some areas of the Italian territory** (with consequent distinct and unique climatic conditions for drying the prosciutti naturally), with **culture** and the **expertise of artisan hands**, have allowed to consolidate the unmistakable quality of a centuries-old production, adapting it to the different requirements of the place and times, but always with **constant respect for tradition.**

The modern food industry must try and adapt to the **production requests of an increasingly more global market** and an increasingly more informed consumer. At the same time it must respond to the **requirements of modern lifestyle** with practical and innovative solutions, suitable for new eating habits, whilst maintaining tradition. Finally, it cannot ignore **the new health guidelines** which push towards the reduction or elimination of additives and preservatives from the list of ingredients and the promotion of dietetic, biological or nutraceutical products.

It is to the latter ambit that the resources of the Italian food industry research and development departments have been greatly committed over the last few years, in collaboration with public research institutions like the Stazione Sperimentale per l'Industria delle Conserve Alimentari (Experimental Station for the Food Preserving Industry) or veterinary preventive medicine institutes. The objective being to satisfy the consumer's organoleptic and nutritional requirements through **products that are increasingly in line with the health and nutritional recommendations of the scientific community, with respect to the strict production specifications of the PDO and PGI deli meats and the centuries-old traditions** of Italian productions.

The PDO mark (Protected Designation of Origin) is a European recognition attributed to those products whose production phases take place in a geographically delimited area and is rigorously in compliance with a precise production specification with respect to a traditional recipe. The characteristics of the territory, from a geographical (defined as a group of natural factors such as climate and environmental features) and human point of view (relative to the production techniques passed down through time, craftsmanship and specific manual skills), together allow to obtain a product inimitable outside of the prescribed production area.

PGI recognition (Protected Geographical Indication) is instead attributed to agricultural and food products to safeguard the quality, reputation, recipe or characteristics of a specific geographical region, in which at least one phase of the production and/or processing and/or elaboration of the products takes place.

PDO AND PGI: MARKS OF RECOGNITION GUARANTEED BY QUALITY, TASTE AND SAFETY

Italian "salumeria" products represent about one third of the European meat products heritage, constituting the largest group in the "salumeria" sector. The **flagship of Made in Italy agri-foodstuffs** has also been rewarded by the European Union, with the attainment of **36 PDO and PGI recognitions** (tab. 1). If, on one hand, these **marks of quality and tradition of the Italian "salumeria"** are valuable signs for the producers as well as seals of assurance for the consumer, they can however **restrict** the possible **evolution of the product**. The relative production specifications that protect the traditional recipe of the products, in fact 'fix' the composition, making it difficult to modify the product's nutritional profile. For example, the production specification regarding Mortadella Bologna PGI envisions that the amount of fat present in each slice is not less than 15% of the total, thus preventing a free choice to reduce the amount of fats. The two protected designation categories differ due to the type and strength of the link existing between the product and the geographical area of production. The PDO mark is attributed to products that are rigorously produced within a delimited geographical area and whose distinctive characteristics represent the discriminating factor for the features of the product itself. The PGI mark gives more importance to production techniques than restriction of the origin of the raw material. In both cases, the **respect for the rules established by the production specifications is strict and guaranteed by a relevant control body**, specifically authorised by the Italian Ministry of Agricultural, Food and Forestry Policies. This control is performed in addition to the standard control on the entire chain. **In spite of the envisioned and mandatory restrictions**, thanks to the continuous commitment of the entire chain, which operates on the quality of the raw material and controlling the production processes, **today modern Italian deli meats have a nutritional profile that is further improved with respect to the past**, in line with modern dietary requirements.

PDO Italian Deli Meats	PGI Italian Deli Meats
Capocollo di Calabria	Bresaola della Valtellina
Coppa Piacentina	Ciauscolo
Crudo di Cuneo	Coppa di Parma
Culatello di Zibello	Cotechino Modena
Jambon de Bosses	Lardo di Colonnata
Lard d'Arnad	Mortadella Bologna
Pancetta di Calabria	Porchetta di Ariccia
Pancetta Piacentina	Prosciutto Amatriciano
Prosciutto di Carpegna	Prosciutto di Norcia
Prosciutto di Modena	Prosciutto di Sauris
Prosciutto di Parma	Salame Cremona
Prosciutto di San Daniele	Salame d'oca di Mortara
Prosciutto Toscano	Salame Sant'Angelo
Prosciutto Veneto Berico-Euganeo	Speck dell'Alto Adige
Salame Brianza	Zampone Modena
Salame di Varzi	
Salame Piacentino	
Salamini italiani alla Cacciatora	
Salsiccia di Calabria	
Soppressata di Calabria	
Soppressa Vicentina	

TABLE 1. PDO AND PGI ITALIAN DELI MEATS

ITALIAN DELI MEATS: A NUTRITIONAL EVOLUTION

The new analyses just performed on Italian deli meats show an important 'nutritional evolution' of the products, with particularly outstanding results in some cases. Having reached this important target, a sort of 'evolutionary map' can be drawn, which considers the different steps that have provided these changes leading to the current product.

The presentation of the new nutritional values of Italian deli meats, along with the direct comparison of the same with previous data, will become a guideline of the new nutritional role that deli meats can cover within a healthy diet.

Quality of the raw material, recipes and applied technology are the basis of the change in the composition of every product.

A CONTINUOUS NUTRITIONAL IMPROVEMENT TREND

Deli meats supply our organism with just about the same nutrients as meat; therefore they can be considered a valid alternative, especially as a main dish. At a macronutrients level, they have a prevalently proteic composition with variable lipid content, depending on the type of deli meat considered. Several distinctions can be made, due to composition and especially regarding fats, between deli meats produced starting from mixtures (generally "insaccati") and deli meats produced starting from whole muscle fraction. In particular, the latter can be more or less fatty depending on the raw material, intended as starting specimen and cut of meat used. However, these fats are characterised by their easy separation from the muscle fraction as they are well-visible and mainly found in the outer part of the products or as striates or nodes infiltrating the muscle. These fats, which are functional for the success of the product during the production phases and important for its typical organoleptic features can therefore be considered as discretionary intake, as most of them can be easily eliminated during the meal. This, however, cannot be said for other types of deli meats, made up from a mixture of muscle and fatty parts, chopped or minced coarsely depending on their type, where separation of the muscle and fatty parts is indispensable during consumption. As far as micronutrients are concerned, **they have high vitamin content,** especially the **B group**, and **are high in mineral salts such as iron, zinc** and controversial sodium. As already mentioned, the bromatological composition of deli meats is extremely variable for each type of product taken into consideration, therefore a fundamental role is covered by the recipe and the technology applied during production; aspects already considered and described previously. The important contribution of the raw material must also be acknowledged. It is due to the different weight that these three factors carry that it is possible to observe the different phases of evolution in the composition of deli meats. The analytic data that has highlighted the evolution of the raw material comes from studies carried out in the early 90's on the composition of pig meat (which also supplied the nutritional values of deli meats known until this moment). With respect to that disclosed previously, this shows a net improvement of the lipid profile. It is most of all thanks to the development of rearing techniques, and therefore human intervention regarding feed and level

of sedentariness of the animal, that this change is made. It must be underlined that the larger amount of fats present in deli meats in the past were necessary and functional at the time. In the first place, because the derivatives of slaughtering had to be preserved for as long as possible: a large amount of external fat, rich in saturated fats, supplied protection against oxidation and rancidity. The energy and fat requirements of the consumers of the epoch were, without a doubt, much higher with respect to the modern consumer, as they effectively burned much more calories owing to manual labour, journeys on foot and permanence in cold environments, particularly in winter periods (meaning they had none of the common comforts which we are used to today). **The change in lifestyle taking place over the last ten years, along with the scientific evidence of the excessive calorie and lipid intake of the general population with the well-known consequences for health, has pushed towards change.** In this way, the intervention on the composition of meat and its derivatives (as all food products) has contributed in facing up to the increasingly more serious problems connected to the global increase of being overweight, obesity and metabolic disorders, at the same time realising guidelines for appropriate consumption from a qualitative and quantitative point of view. The objective of modifying the diet, both animal (in order to improve the nutritional profile of the relative derivatives) and human, arises from here. The pig (belonging to breeds cleverly selected on the basis of the protein and fat ratio in its meat), which has shown itself to be an extremely adaptable animal in responding to these human demands, has been prescribed with a mainly vegetable diet substantially based on maize-barley-soya, integrated with vitamins and mineral salts. The diet and zoo-technical factors (rearing systems that allow fat deposit mainly at an adipose level rather than muscular), has given rise to a raw material characterised by high concentrations of vitamins and minerals, as well as progressively reduced fat contents, with a balanced content of saturated and unsaturated fats: the latter have passed from 30% to over 60% of the total fats. Regarding the physical composition of the products (with reference to the different recipes and formulations), remember that due to their nature, deli meats are subject to regulatory and technological restrictions. In the first case, reference is made to the determination and fixation with traditional recipes and the increasing number of PDO and PGI marked products, the composition of which is established by precise production specifications, thus limiting the possibility of interventions aimed at improving the nutritional profile. In primis, the technological production restrictions regard the fact that salt is the basis of the preservation technique of matured deli meats: therefore, any intervention on this natural substance used as a preservative and seasoning, but at the same time supplier of sodium, is more complex and delicate. In spite of this, progress in production techniques have led to a general improvement of the nutritional profile of these products, while respecting tradition, allowing them to continue being a pillar of worldwide renowned Italian food culture.

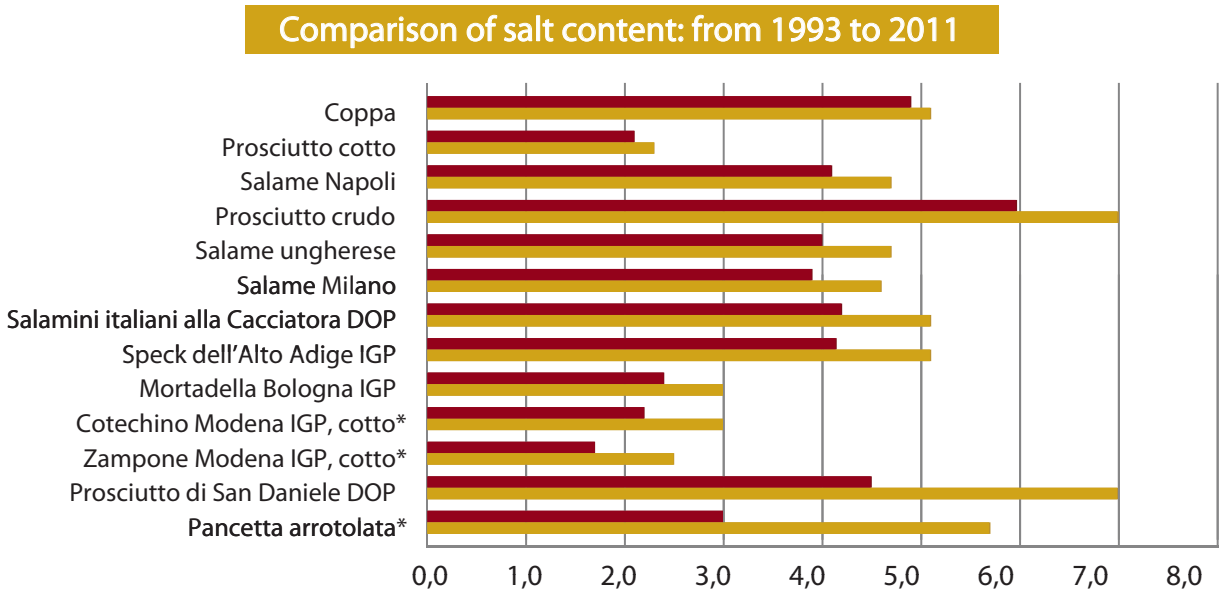
DELI MEAT NUTRIENTS, STILL IN EVOLUTION

As previously indicated, the **nutritional improvement of the raw material, especially concerning the fat, vitamin and mineral content, has been accompanied by the continuous progress of the food processing industry.** In particular, the development of production systems, the constant control of drying and maturing periods, greater attention to the quantity and quality of the spices used, means **a significant reduction of salts**, sodium chloride in primis. In relation to the latter and the technological limits to which reference was made previously and given that the first function of salt in these cases is that of a preservative, it is evident that this cannot be eliminated at will. Research is continuing in this direction and systems are being studied to replace sodium chloride (even in part) with possible substitutes, such as potassium chloride mixed with other salts, without however modifying the traditional organoleptic balance of the deli meats.

About 0.1-0.6 g of sodium is eliminated from the organism daily. The maximum amount of salt necessary to reintegrate physiological losses is therefore 1.5 g. Consumption of less than 6 g of salt daily is a good compromise between satisfying the taste buds and prevention of the risks linked to sodium.

Salt and deli meats. What has changed?

Deli meats must be treated with salts in order to be produced and preserved. The importance of the oldest preservation ingredient and the most used around the world for maturing processes in the realisation of deli meat products having renowned universal flavour, emerges already from analysis of the roots of the term: the word 'salume' derives from salt. Sodium, found naturally in many foodstuffs, makes up a part of common table salt. Even if the amount of sodium required by our organism is assured by the content found naturally in foods, we tend to add salt during cooking and at the table in order to satisfy our palate. Commonly, also industrially processed products and away-from-home meals can be rich in salt. Even if it is an indispensable mineral for the correct functioning of the organism (it regulates osmosis, participates in the creation of the concentration and electrical gradient along with potassium, intervenes in nerve supply and in muscular contraction), an excessive level of sodium in the blood increases the risk of several cardiovascular and renal illnesses, both due to increased blood pressure and also independently from this mechanism. Reduction of dietary salt can therefore be an important preventive and curative measure for many people. Thanks to the intense media coverage of the subjects that correlate salt with health, the content of this ingredient is being reduced in many food products, often under the protection of the authorities that stipulate the commitment with the category associations or with the individual companies. In the case of the deli meats processing industry, which has always paid great attention to customer requirements, independent moves have been made in the last few years **in order to find solutions that can minimize the use of salt**, while respecting the prescriptions of the various production regulations. In this way, **the salt conten**t (and consequently sodium) **in Italian deli meats has reduced greatly** (fig. 2), even if with variable impact on the different products, as highlighted by the new analytic values available on this subject. It can be deduced that the **trend for improvement is general** and consists in a **reduction of salt** going from about **4% to over 45% depending on the product.** The variability between the different products is governed by several factors, among which the initial content, the impact of production techniques on the product (that allow to make modifications in different measures), as well



	Coppa	Prosciutto cotto	Salame Napoli	Prosciutto crudo	Salame ungherese	Salame Milano	Salamini italiani alla Cacciatora DOP	Speck dell'Alto Adige IGP	Mortadella Bologna IGP	Cotechino Modena IGP cotto*	Zampone Modena IGP cotto*	Prosciutto di San Daniele DOP	Pancetta arrotolata*
1993	5,1	2,3	4,7	7,0	4,7	4,6	5,1	5,1	3,0	3,0	2,5	7,0	5,7
2011	4,9	2,1	4,1	6,0	4,0	3,9	4,2	4,1	2,4	2,2	1,7	4,5	3,0
Reduction %	-4%	-9%	-13%	-15%	-15%	-15%	-18%	-19%	-20%	-27%	-32%	-36%	-47%

** Cotto= cooked, arrotolata= rolled up*

FIGURE 2. TREND OF SALT REDUCTION FOR ITALIAN DELI MEATS FROM 1993 TO PRESENT

as protection of the recipes. In any case, considering the portions and quantities effectively consumed every week and in the light of the data given above deriving from the new analyses and with respect to the past, today it is all the more possible to confirm that **deli meats are not the most significant source of salt in the diet.** This position is held by other food products consumed daily and in a greater amount (such as cereal derivatives). Limited quantities of other preservative ingredients, in addition to salt, are allowed by law in the formulation of different deli meats. These are nitrates in particular and sometimes nitrites, additives that were used greatly in the past when the artificial refrigeration methods used today were not available and the work environments were not subjected to the current thorough controls. Thanks to the use of fridges and microbiological knowledge, as well as the respect for hygiene rules and the exploitation of the bacteriostatic properties of spices and aromatic herbs such as garlic, pepper and chilli pepper, today it is possible to produce salamis like in the past but which are safer from a sanitary point of view and which have improved organoleptic properties and small amount of preservatives. Also **the content of nitrates in some deli meats has reduced greatly through the years until near elimination, while the nitrites practically no longer exist.**

A mine of micronutrients: vitamins and mineral salts

With respect to the values obtained from the 1993 analyses, referring to products that even then resulted as having a large content of vitamins and mineral salts necessary for the organism, the trend resulting from the new nutritional values does not disclaim that revealed in the past, but instead, enhances and completes the picture.

Vitamins

In relation to the vitamin content, the data disclosed in 1993 highlights **a significant content of group B vitamins**, particularly B1, B2 and B3 (i.e. thiamine, riboflavin and niacin, or PP), respectively important for the state of nutrition of the nervous tissues and for the metabolism of carbohydrates, the state of nutrition of the skin and mucous membranes, for cellular respiration and the synthesis and break down of amino acids, fatty acids and cholesterol. Today, **these vitamins are sometimes present in large quantities, exceeding 30% of the recommended daily amount for an adult in just one portion**, as in the case of vitamin B1 (as happens for example for cooked ham and PDO rough hams) (tab. 2).

	Vit B1	Vit B2	Vit B3
	RDA %/ 50 g		
Bresaola della Valtellina IGP	**19%**	5%	9%
Coppa	**28%**	6%	**19%**
Cotechino Modena IGP, cotto*	4%	3%	8%
Mortadella Bologna IGP	11%	4%	13%
Pancetta arrotolata*	**17%**	2%	9%
Prosciutto cotto	**30%**	4%	14%
Prosciutto cotto, sgrassato*	**32%**	5%	14%
Prosciutto crudo	**26%**	7%	**17%**
Prosciutto crudo, sgrassato*	**29%**	8%	**19%**
Prosciutto di Modena DOP	**27%**	7%	**17%**
Prosciutto di Modena DOP, sgrassato*	**32%**	9%	**21%**
Prosciutto di San Daniele DOP	**31%**	7%	**16%**
Prosciutto di San Daniele DOP, sgrassato*	**35%**	8%	**18%**
Salame Milano	**24%**	6%	**16%**
Salame Napoli	**23%**	5%	**16%**
Salame ungherese	**21%**	6%	12%
Salamini italiani alla Cacciatora DOP	**23%**	5%	**24%**
Speck dell'Alto Adige IGP	**19%**	6%	13%
Zampone Modena IGP, cotto*	3%	3%	8%

** Cotto= cooked, arrotolata= rolled up, sgrassato= visible fat removed*

TABLE 2. QUANTITY (EXPRESSED AS % OF THE RECOMMENDED DAILY AMOUNT) OF VITAMINS B1, B2 AND B3 COVERED BY A PORTION (50 G) OF SOME ITALIAN DELI MEATS (VALUES CALCULATED FROM DATA DERIVING FROM THE 2011 STUDY)

A significant amount of vitamin B6 (or pyridoxine) (tab. 3) in some deli meats also **emerges** from the new analyses. This is a precursor of an enzyme, which is important in the metabolism of nitrogen compounds and can therefore affect the use of the proteins by part of the organism, but also in the synthesis of haemoglobin and the metabolism of carbohydrates and lipids. Moreover, being meat derivatives, **deli meats** are also known as a **source of vitamin B12**: however, analytic data supporting this fact was not available until now and the experimental values known date back to the microbiological analysis performed in the 50's. **Vitamin B12 performs many very important functions**, intervening in the maturation of red blood cells, in nerve functions and in the biosynthesis of hemoproteins: deficiency of the same can cause problems to the nervous system and production of cells in the blood, until a form of anaemia defined 'pernicious' occurs; vitamin B12 deficiency can also cause a lack of folic acid, with a further risk of anaemia. It is also involved in the metabolism of fatty acids, amino acids and nucleic acids. The dietary reference value for the intake of this vitamin by the adult population is 2.5 micrograms/day. Remember that it resists cooking and can only be found in foods of animal origin. This is why vegetarian diets are at a great risk of vitamin B12 deficiency and a vegan diet is not recommended during of pregnancy (when daily requirement increases), in order to prevent the risk of irreversible neurological damage to the future child, especially if the baby is to be breastfed. Many Italian deli meats contain significant quantities of this precious vitamin: actually, **bresaola supplies a quantity per portion that covers 15% of the requirement of the adult population** (tab. 4). The control carried out over the last few years on the pig's diet has also allowed to obtain **meats containing vitamin E, a natural antioxidant** that decays easily in light and the presence of heat, important because it contributes to the maintenance of cellular integrity. A vitamin E deficiency, generally associated with malnutrition generally leads to development disorders, including problems with the nervous system and general metabolism. The recommended dietary value for a healthy adult is around 12 mg a day.

Deli Meats with highest vitamin B6 content	RDA %/ 50 g (one portion)
Prosciutto di San Daniele DOP, sgrassato*	43%
Prosciutto di Modena DOP, sgrassato*	42%
Prosciutto crudo, sgrassato*	39%
Prosciutto di San Daniele DOP	37%
Prosciutto di Modena DOP	36%
Prosciutto crudo	36%
Salamini italiani alla Cacciatora DOP	31%
Bresaola della Valtellina IGP	19%
Speck dell'Alto Adige IGP	17%
Prosciutto cotto, sgrassato*	14-17%
Prosciutto cotto	13-16%
Mortadella Bologna IGP	9%

** Sgrassato= visible fat removed*

TABLE 3. DELI MEATS WITH HIGHEST VITAMIN B6 CONTENT (VALUES

Vitamin B12 in Italian deli meats	RDA %/ 50 g (one portion)
Bresaola della Valtellina IGP	15%
Coppa	14%
Salame Milano	11%
Cotechino Modena IGP, cotto*	10%
Salame ungherese	10%
Salamini italiani alla Cacciatora DOP	10%
Pancetta arrotolata*	10%
Prosciutto di San Daniele DOP	9%
Zampone Modena IGP, cotto*	9%
Salame Napoli	9%
Prosciutto crudo	8%
Prosciutto di Modena DOP	7%
Speck dell'Alto Adige IGP	7%
Mortadella Bologna IGP	6%
Prosciutto cotto	2-3%

** Cotto= cooked, arrotolata= rolled up*

TABLE 4. VITAMIN B12 IN ITALIAN DELI MEATS AND CONTRIBUTION TO COVERING THE REQUIREMENTS OF THE ADULT POPULATION (VALUES CALCULATED FROM DATA DERIVING FROM THE 2011 STUDY)

Mineral salts

Pig meat and relative processed products **have a good content of several mineral salts**, for which there is a recommended daily intake level. These mineral salts are defined as 'trace elements' as even **minimum doses are indispensible for good functioning of the organism** (tab. 5). These elements are also **present in a highly bioavailable form** in foodstuffs of animal origin. This is due to the affinity of the animal substrates with those of humans. It must also be considered that some of the precious mineral salts can be lost during meat cooking processes. Instead, **deli meats** (also cooked products, as long as 'delicate' cooking methods are used) **basically keep the amount of such elements intact.** The analyses performed in 1993 on the mineral content of deli meats already showed the **presence, sometimes significant of iron, zinc and potassium**, in fact in a more bioavailable form with respect to that contained in foodstuffs of vegetable origin. Other minerals, among which **magnesium, copper, phosphorus and selenium**, for which data was available in previous literature, sometimes **resulted in significant amounts.** These minerals are necessary for many physiological and biochemical processes.

Italian deli meats minerals	
Iron	Iron Cellular respiration; metabolism of the nucleic acids; collagen synthesis
Phosphorus	Phosphorus Protein construction; energy exploitation of the foodstuffs
Magnesium	Magnesium Skeleton construction; nerve and muscle activity; metabolism of fats and protein synthesis
Potassium	Potassium Neuromuscular excitability; acid-base balance; water retention; osmotic pressure
Copper	Copper Pigmentation of skin and hair; bone tissue maintenance
Selenium	Selenium Metabolism of some thyroid hormones; effect on energy metabolism and oxidative stress
Zinc	Zinc Growth; healing processes; taste and smell perception processes

TABLE 5. MAIN MINERALS IN ITALIAN DELI MEATS AND RELATIVE FUNCTION WITHIN THE ORGANISM

In general, the trend relative to these elements has not varied relevantly and it is therefore possible to reconfirm the importance of eating deli meats regarding their contribution to the supply of minerals in the diet. **In particular, the content of phosphorus and potassium are very high, so much so that just one 50 g portion of some deli meats can cover more than 15% of an adult's daily requirement** (tab. 6).

	Potassium	Phosphorus	Magnesium	Iron	Zinc	Copper
	RDA % of one portion					
Bresaola della Valtellina IGP	**16%**	**19%**	3%	9%	**23%**	4%
Coppa	**17%**	**16%**	4%	5%	**19%**	5%
Cotechino Modena IGP, cotto*	6%	6%	1%	5%	8%	-
Mortadella Bologna IGP	8%	8%	2%	4%	8%	-
Pancetta arrotolata*	9%	8%	2%	1%	6%	3%
Prosciutto cotto	8%	9-10%	2%	2%	5-7%	4-5%
Prosciutto crudo	**16%**	14%	3%	3%	10%	2%
Prosciutto di Modena DOP	**15%**	**15%**	3%	4%	14%	3%
Prosciutto di San Daniele DOP	**15%**	13%	3%	3%	12%	2%
Salame Milano	**16%**	**15%**	3%	4%	15%	7%
Salame Napoli	**17%**	**15%**	3%	3%	12%	5%
Salame ungherese	**16%**	13%	2%	4%	14%	6%
Salamini italiani alla Cacciatora DOP	**17%**	**15%**	3%	4%	13%	-
Speck dell'Alto Adige IGP	**16%**	**19%**	4%	5%	12%	4%
Zampone Modena IGP, cotto*	3%	5%	1%	5%	7%	-

** Cotto= cooked, arrotolata= rolled up*

TABLE 6. QUANTITY (EXPRESSED AS % OF THE RECOMMENDED DAILY AMOUNT) OF POTASSIUM, PHOSPHORUS, MAGNESIUM, IRON, ZINC AND COPPER COVERED BY ONE PORTION (50 G) IN SOME ITALIAN DELI MEATS (VALUES CALCULATED FROM DATA DERIVING FROM THE 2011 STUDY)

The fat trends: everything you must know

When considering a healthy diet, **the correct amount of lipids** must be consumed daily. This **is equal to 25-30% of the total calories** consumed by a healthy adult that practices moderate physical activity. As well as constituting a concentration of energy (9 kcal/g), the lipids supply essential fatty acids (thus defined because they are not synthesized by the organism but intervene in the regulation of many physiological processes) in the omega-3 and omega-6 families and favour the absorption of the fat-soluble vitamins A, D, E, K and carotenoids. Whether they can be visible or hidden in the food matrices, liquids or solids, all lipids supply the same amount of energy, but they can be different at a qualitative level and have important effects on the state of health depending on their composition in fatty acids (which can be saturated, unsaturated or trans). Fatty acids generally have a solid aspect at room temperature, conferred by the absence of double bonds inside the molecule. These fatty acids are characteristic of products of animal origin, in which variable amounts of cholesterol are also found: to favour the good health of the heart and arteries it is a good idea to follow a diet that is not too rich in these types of fats, limiting intake to less than 20-30 g a day in a balanced diet of 2000 kcal, calculated for the requirements of a healthy adult (i.e. between 7 and 10% total daily calorie intake), also in cases where there is no tendency to have high cholesterol levels in the blood. Being derivatives of animal origin, deli meats are among the foodstuffs indicated that supply large amounts of saturated fats and cholesterol to the diet. In reality, **the quantity of lipids has greatly decreased in the current production of deli meats** (tab. 7) **and, thanks to modern pig rearing techniques,** which are fed on maize, barley and soya-based products, **the compositional quality has been optimized at the same time.**

	Lipids (g/100 g)		Reduction %
	1993	2011	1993-2011
Prosciutto cotto	14,7	7,6	**-48%**
Cotechino Modena IGP, cotto*	24,7	16,3	**-34%**
Zampone Modena IGP, cotto*	25,9	17,5	**-33%**
Bresaola della Valtellina IGP	2,6	2,0	**-24%**
Prosciutto cotto, sgrassato*	4,4	3,5	**-21%**
Prosciutto di San Daniele DOP	23,0	18,6	**-19%**
Mortadella Bologna IGP	28,1	25,0	**-11%**
Speck dell'Alto Adige IGP	20,9	19,1	**-8%**
Coppa	33,5	31,6	**-6%**
Salamini italiani alla Cacciatora DOP	34,0	32,7	**-4%**

** Cotto= cooked, sgrassato= visible fat removed*

TABLE 7. REDUCTION OF THE LIPID CONTENT IN SOME ITALIAN DELI MEATS FROM 1993 TO PRESENT

Cooked ham is a 'slimming champion: it has almost halved its fat content in less than 20 years.

In particular, this improvement has affected all cooked "insaccato" products, due to the fact that the operators in the chain have a greater possibility to intervene. Thanks to the 'technological' content of this type of deli meat, they have been more easily and more greatly affected by the evolution and innovation processes that involve the sector industry. The saturated fat content in cotechino, cooked ham and zampone has been greatly reduced (up to almost 40%); with improvements also in mortadella and Prosciutto di San Daniele PDO (tab. 8). As a consequence of the saturated fat reduction in some deli meats and, in some cases, the increase in unsaturated fats (which can have positive effects on the heart and circulation and could also have a role in the prevention of some tumours), **there has been a reduction in the ratio between saturated and unsaturated fatty acids** (tab. 9). With respect to previous data, this now tends greatly towards the typical values of vegetable oils or fish.

		Saturated Fats	
		g/100 g	Reduction % 1993-2011
1993	Cotechino Modena IGP, cotto*	8,18	-38%
2011		5,09	
1993	Prosciutto cotto	5,10	-37%
2011		3,20	
1993	Zampone Modena IGP, cotto*	8,48	-36%
2011		5,45	
1993	Prosciutto di San Daniele DOP	7,56	-14%
2011		6,47	
1993	Mortadella Bologna IGP	9,25	-11%
2011		8,26	
1993	Bresaola della Valtellina IGP	0,75	-4%
2011		0,72	

** Cotto= cooked*

TABLE 8. REDUCTION OF SATURATED FATS IN SOME ITALIAN DELI MEATS FROM 1993 TO PRESENT

The table at the side (tab. 10) shows how continuous improvement has led to the attainment of a balance between the saturated and unsaturated fat content: in most products the precious fats such as **the unsaturated ones have passed from 30% to over 60% of total fats.**

		Ratio between saturated/ unsaturated fats	
		g/100 g	Reduction % 1993-2011
1993	Prosciutto di San Daniele DOP	0,64	-11%
2011		0,57	
1993	Cotechino Modena IGP, cotto*	0,53	-8%
2011		0,49	
1993	Pancetta arrotolata*	0,57	-7%
2011		0,53	
1993	Zampone Modena IGP, cotto*	0,53	-7%
2011		0,49	
1993	Mortadella Bologna IGP	0,55	-3%
2011		0,54	

** Cotto= cooked, arrotolata= rolled up*

TABLE 9. REDUCTION OF THE RATIO BETWEEN SATURATED AND

	Balance %	
	Saturated Fats	Unsaturated Fats
Bresaola della Valtellina IGP	37%	63%
Coppa	37%	63%
Cotechino Modena IGP, cotto*	31%	69%
Mortadella Bologna IGP	33%	67%
Pancetta arrotolata*	33%	67%
Prosciutto cotto	39-44%	56-61%
Prosciutto cotto, sgrassato*	37-42%	58-63%
Prosciutto crudo	35%	65%
Prosciutto crudo, sgrassato*	34%	66%
Prosciutto di Modena DOP	35%	65%
Prosciutto di Modena DOP, sgrassato*	33%	67%
Prosciutto di San Daniele DOP	35%	65%
Prosciutto di San Daniele DOP, sgrassato*	33%	67%
Salame Milano	35%	65%
Salame Napoli	37%	63%
Salame ungherese	30%	70%
Salamini italiani alla Cacciatora DOP	37%	63%
Speck dell'Alto Adige IGP	35%	65%
Zampone Modena IGP, cotto*	31%	69%

** Cotto= cooked, arrotolata= rolled up, sgrassato= visible fat removed*

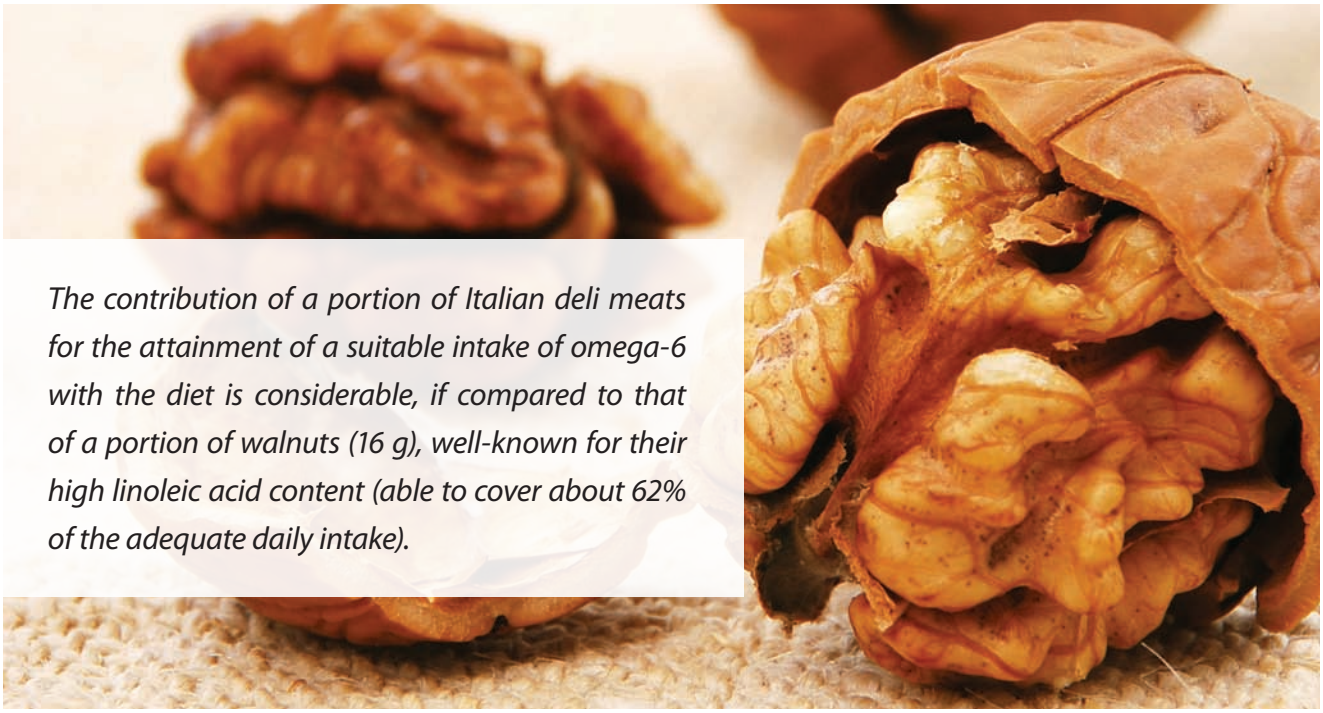
TABLE 10. CURRENT LIPID COMPOSITION OF ITALIAN DELI MEATS

Today, **oleic acid** (monounsaturated, main lipid component of olive oil) **is the predominant fatty acid**, alone representing about 40% of the total fatty acids in deli meats. It must also be remembered that stearic acid (that on average constitutes 30% of the saturated fats in deli meats) acts like monounsaturated fat in the organism, converting into oleic acid. Among the polyunsaturated fatty acids, **omega-6 and omega-3 ranges have shown a positive effect on health. Linoleic acid (LA – C18:2) is the essential fatty acid** (as it cannot be synthesized by the human body and is necessary for maintenance of the metabolic integrity) of the omega-6 range. A dose-related correlation is noted between the intake of linoleic acid and blood cholesterol concentrations: negative (and therefore beneficial) regarding LDL cholesterol, positive for HDL. It has also been shown that by replacing the consumption of saturated fats with the same amount of omega-6 (and therefore without variation in the total number of fats) a reduction in the number of cardiovascular events within the population can be noted. A suitable intake of linoleic acid could consist in a quantity equal to 4% of the energy intake, i.e. about **9 grams per day for an average adult** practicing moderate physical activity.

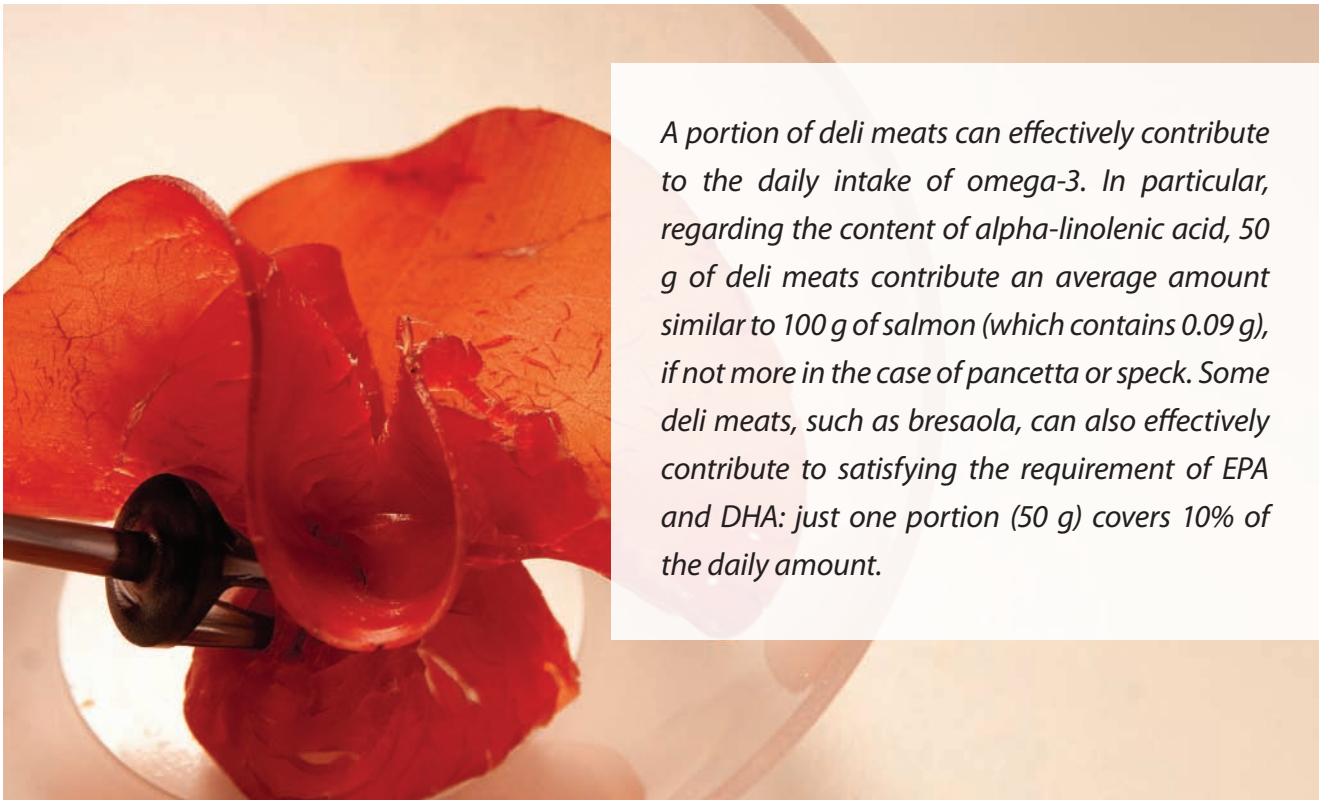
LA (Omega- 6)	g/one portion (50 g)	Daily suitable intake %
Pancetta arrotolata*	3,08	35%
Salame Milano	1,97	22%
Salamini italiani alla Cacciatora DOP	1,95	22%
Salame ungherese	1,83	21%
Coppa	1,66	19%
Mortadella Bologna IGP	1,53	17%
Salame Napoli	1,49	17%
Prosciutto di Modena DOP	1,39	16%
Speck dell'Alto Adige IGP	1,37	15%
Prosciutto di San Daniele DOP	1,18	13%
Zampone Modena IGP, cotto*	1,04	12%
Cotechino Modena IGP, cotto*	0,99	11%

** Cotto= cooked, arrotolata= rolled up*

TABLE 11. LINOLEIC ACID (OMEGA-6) IN ONE PORTION OF ITALIAN DELI MEATS AND COVERAGE OF NUTRITIONAL REQUIREMENT FOR AN ADULT



The contribution of a portion of Italian deli meats for the attainment of a suitable intake of omega-6 with the diet is considerable, if compared to that of a portion of walnuts (16 g), well-known for their high linoleic acid content (able to cover about 62% of the adequate daily intake).



A portion of deli meats can effectively contribute to the daily intake of omega-3. In particular, regarding the content of alpha-linolenic acid, 50 g of deli meats contribute an average amount similar to 100 g of salmon (which contains 0.09 g), if not more in the case of pancetta or speck. Some deli meats, such as bresaola, can also effectively contribute to satisfying the requirement of EPA and DHA: just one portion (50 g) covers 10% of the daily amount.

The human body also cannot synthesize **Alpha-linolenic acid (ALA – C18:3)** and therefore represents an essential fatty acid, necessary for maintenance of metabolic integrity. **Suitable consumption of this fatty acid can be represented by 0.5% of the daily energy intake**, i.e. just over 1 gram for adults. Even if the human body can synthesize another 2 long chain fatty acids from the omega-3, eicosapentaenoic acid **(EPA)** and docosahexaenoic acid **(DHA)** families as well as **ALA**, many studies have confirmed **the beneficial effects of these preformed polyunsaturated fatty acids** on cardiovascular risk factors, such as the reduction of triglycerides in the plasma, platelet aggregation and blood pressure. For primary prevention of cardiovascular risk in healthy adult subjects, a suitable intake level of EPA and DHA is equal to 250 mg a day. **The role that Italian deli meats can cover**, several of these in particular, **in supplying the organism with a good part of the fatty acids necessary to function correctly is evident from the tables** (tab. 11-12-13).

ALA (Omega-3)	g/one portion (50 g)	Daily suitable intake %
Pancetta arrotolata*	0,14	13%
Speck dell'Alto Adige IGP	0,11	10%
Salame Milano	0,09	8%
Salame ungherese	0,09	8%
Mortadella Bologna IGP	0,08	7%
Salamini italiani alla Cacciatora DOP	0,08	7%
Prosciutto di Modena DOP	0,07	6%
Coppa	0,07	6%
Prosciutto crudo	0,06	6%
Prosciutto di San Daniele DOP	0,06	5%
Salame Napoli	0,05	5%
Zampone Modena IGP, cotto*	0,05	4%
Cotechino Modena IGP, cotto*	0,05	4%

EPA + DHA (Omega 3)	g/one portion (50 g)	Daily suitable intake %
Bresaola della Valtellina IGP	0,02	10%
Speck dell'Alto Adige IGP	0,02	7%
Prosciutto di Modena DOP	0,01	6%
Prosciutto di San Daniele DOP	0,01	5%
Prosciutto crudo	0,01	4%
Prosciutto cotto	0,01	3-4%

** Cotto= cooked, arrotolata= rolled up*

On the left side:
TABLE 12: LINOLENIC ACID (OMEGA-3) IN ONE PORTION OF ITALIAN DELI MEATS AND COVERAGE OF NUTRITIONAL REQUIREMENT FOR AN ADULT

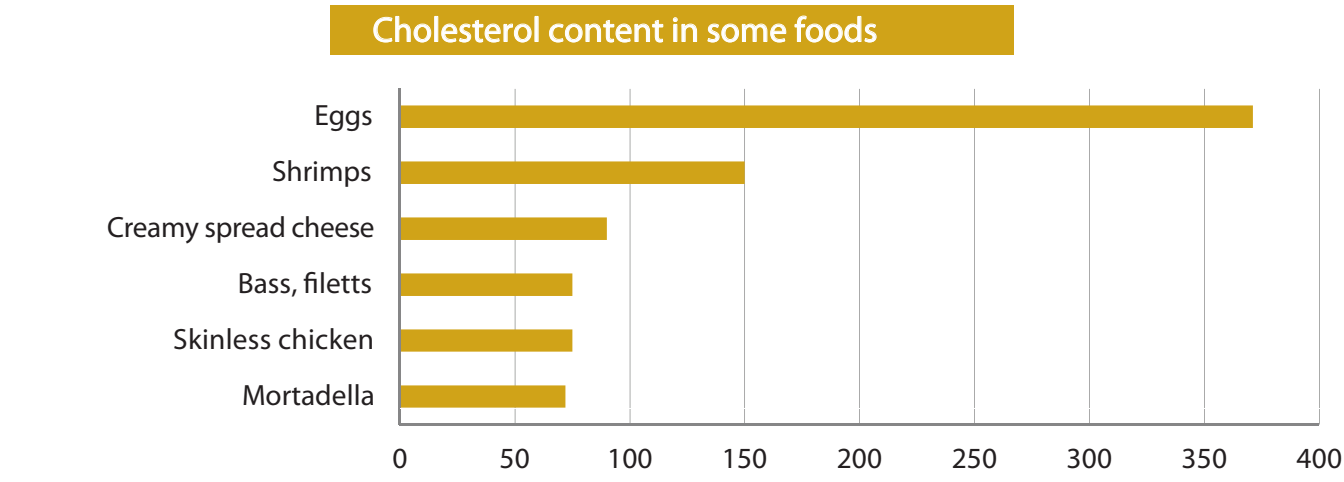
On top:
TABLE 13: EPA+DHA (OMEGA-3) IN ONE PORTION OF ITALIAN DELI MEATS AND COVERAGE OF NUTRITIONAL REQUIREMENT FOR AN ADULT

Parallel to the reduction of saturated fats, **considerable reductions of the cholesterol content have also been recorded,** for some products in particular such as cooked ham, pancetta and cotechino (tab. 14). In spite of the positive evolution in the composition and fat content, some deli meats such as mortadella are still victims of discrimination relative to the excessive content of fats and cholesterol (fig. 3). In reality, **from a nutritional point of view, the presence of fatty acids is balanced** and is mostly made up from monosaturated fatty acids, the same contained in olive oil and able to reduce the excess serum LDL cholesterol (i.e. the 'bad' type) and increase the HDL ('good' type) at the same time.

	Cholesterol (mg/100 g)		Reduction %
	1993	2011	1993-2011
Prosciutto cotto	62	49	**-22%**
Pancetta arrotolata*	80	68	**-15%**
Cotechino Modena IGP, cotto*	98	86	**-12%**
Bresaola della Valtellina IGP	67	63	**-6%**
Salamini italiani alla Cacciatora DOP	99	94	**-5%**
Salame ungherese	94	92	**-2%**

** Cotto= cooked, arrotolata= rolled up*

TABLE 14. REDUCTION OF CHOLESTEROL CONTENT OF SOME ITALIAN DELI MEATS FROM 1993 TO PRESENT



	Eggs	Shrimps	Creamy spread cheese	Bass, filetts	Skinless chicken	Mortadella
Cholesterol (mg/ 100 g)	371	150	90	75	75	72

FIGURE . CHOLESTEROL CONTENT IN MORTADELLA AND IN SOME OTHER FOOD PRODUCTS

There is about 70 mg of cholesterol present in 100 grams of mortadella Bologna PGI, a value just below that of bass and chicken.

THE DIETARY VALUE OF ITALIAN DELI MEATS

Italian deli meats can be easily integrated into everyone's diet with great pleasure. Thanks to their unmistakable taste and practicality, they can be eaten as they are or used as a delicious ingredient that can give that "extra touch" to any recipe.
The proteins with high biological value and fats (in increasingly reduced quantities) that supply useful energy to the organism along with precious mineral salts and vitamins, make Italian deli meats ideal for the entire population. It is due to their distinctive nutritional profile that it is possible to formulate comprehensive nutritional advice referring to different times of consumption, in line with dietary recommendations issued by the scientific community and with modern lifestyles, inevitably aimed at frenzied pace but, at the same time (almost paradoxically), at sedentariness.

Today Italian deli meats are lighter and in line with the nutritional requests of the modern consumer.

EVERYBODY TO HIS OWN: THE PLEASURE OF ITALIAN TASTE FOR EVERYONE

It is important to remember that **all nutrients are necessary** to the organism **for a correct diet.** The recommended intake of proteins, carbohydrates, lipids, vitamins and minerals contributes to the proper composition of a balanced diet. Looking at it from this point, **all foodstuffs can supply their quota of nutrients to the total composition of the diet**, but also consider that **no unique product exists that contains all nutrients and substances in the correct quantities, and which can therefore satisfy the organism's nutritional requirements alone.**

Being meat derivatives, deli meats can supply the organism with different substances necessary for functioning, often in ideal proportions or higher quality with respect to other foodstuffs. It must also be highlighted that as a direct consequence of the lipid reduction considered, **a slight parallel increase in proteins was obtained**, as well as a **general reduction of the calorie supply** through the years.

The proteins contained in deli meats, as those in the raw material, **have a high biological quality**: in fact, they contain an appropriate quantity of all essential amino acids. This means that the organism's protein requirements can be satisfied by eating a minimum amount. The deli meats proteins are also characterised by **quick digestibility**. This is due to the fact that during maturing processes the enzymes and the characterising microbial flora have already performed a sort of pre-digestion, breaking the long protein chains. Thanks to the progress in breeding and production techniques throughout the last years and precise genetic selection of the pig, the reduction of the fat content in its meat is flanked by a parallel **increase in proteins**. Given that proteins supply fewer calories than fats (4 against 9 kcal per gram), there is also a **consequent reduction of the energy value**, in particular for those deli meats that have undergone large reductions in their fat content, therefore resulting 'leaner'.

A portion of deli meats (50 g) **provides between 54 and 265 kcal** (tab. 19): along with the improvement of the micro and macronutrients composition, this allows them to be versatile and available for all nutritional requirements and times of consumption. The large variety of Italian deli meats available on the market today (also characterised by different protein: fat ratios) offers the population of all age groups and with different life styles, a wide choice and the faculty to identify the ideal products for personal dietary requirements and taste.

	Energy kcal/50 g portion
Bresaola della Valtellina IGP	76
Coppa	201
Cotechino Modena IGP, cotto*	127
Mortadella Bologna IGP	144
Pancetta arrotolata*	265
Prosciutto cotto	69
Prosciutto cotto, sgrassato*	54
Prosciutto crudo	118
Prosciutto crudo sgrassato*	85
Prosciutto di Modena DOP	154
Prosciutto di Modena DOP, sgrassato*	101
Prosciutto di San Daniele DOP	136
Prosciutto di San Daniele DOP, sgrassato*	88
Salame Milano	192
Salame Napoli	189
Salame ungherese	210
Salamini italiani alla Cacciatora DOP	206
Speck dell'Alto Adige IGP	150
Wurstel di puro suino	125
Zampone Modena IGP, cotto*	131

** Cotto= cooked, arrotolata= rolled up, sgrassato= visible fat removed*

TABLE 15. ENERGY SUPPLIES PER PORTION IN MOST DELI MEATS

Infancy and adolescence: a good support for growth

Good growth requires **a higher intake of proteins, vitamins** (especially C, D and the B complex) **and mineral salts** (such as calcium, iron and iodine) for the creation of new tissues. **Energy and nutrient requirements** are also **very high during adolescence**, especially where **proteins, iron, calcium and vitamins A, C and D** are concerned. A varied diet, alternating during the week and divided into **5 daily meals,** which include breakfast, snack, lunch, afternoon snack and dinner, can supply all nutrients required by the growing organism.
Many deli meats are recommended for babies and children who, except for in particular cases, can eat all types especially at **main meals** or as **a snack**. If controlling calories, just choose a leaner product such as prosciutto, even better if fat reduced, or bresaola, but also mortadella or speck. In particular, **a small sandwich with a slice of ham, at school or home, can be considered a healthy snack** (tab. 20). If compared to the composition of other snack foods usually eaten, it is much **richer in the necessary nutrients** (tab. 21): complete proteins, mineral salts and vitamins, especially B12, necessary for growth and cognitive development.

A small ham sandwich with prosciutto cotto can be considered a suitable snack from a caloric point of view (150 kcal), simple, digestible and rich with all nutrients necessary for growth

Food	Portion (g)	Energy (kcal)	Protein (g)	Fats (g)	Carbohydrates (g)
Snack filled with chocolate	40	135	3	4	24
Snack with jam	40	143	2	3	28
Sandwich with prosciutto cotto	**40+30**	**151**	**8**	**2,5**	**26**
Danish toasts with jam	30+20	155	3	2	36
Brioche	50	206	4	9	29
Tomato pizza	100	243	4	4	52

TABLE 16. NUTRIENT COMPOSITION OF SEVERAL TYPES OF SNACKS

Nutrition and taste for the elderly

The lengthening of the average lifespan has made it necessary to adapt dietary features to the particular requirements of a growing group of mature and elderly people (generally characterised by a loss of appetite, a reduction in energy requirements, chewing difficulties, digestive problems, vitamin B12 deficiency and malabsorption), giving them **foodstuffs with limited calories, but at the same time nutrient and rich in building blocks, palatable and easy to digest.** In general, the requirement of some micronutrients increases in this target group: **calcium, phosphorus and zinc.** The latter is required especially if the immune system is compromised or if wounds must heal (for example bed sores). **Selenium** is also an important mineral for preventing neurodegenerative processes that may occur in old age, along with the **antioxidant vitamins** such as C and E. From a practical point of view, it is a good idea to purchase products that do not perish easily, but which are fresh and can resist in the fridge or pantry for several days.
Thanks to the reduction of their salt, fats and cholesterol content, their richness in proteins and gained micronutrients along with some vitamins and mineral salts (among which vitamin E, zinc, phosphorus and selenium), **modern deli meats** represent a **good source of many of the nutritional substances necessary for the elderly.** The **taste** and excellent **palatability**, as well as being **easy to chew** (especially where cooked and minced products are concerned) and **shelf life** (if particular thought is given to the packed products already sliced and sold in controlled atmosphere or vacuum packed trays), means these products are particularly indicated for this group of the population.

Protein and Energy for sport

The diet of a sportsperson must reflect that of a normal subject but with an **increase in calories** (and therefore of lipids, carbohydrates and proteins) **in proportion to the type and quantity of the training sessions, to be distributed** mainly between a more abundant but simple **breakfast and snacks**, so that lunch and dinner are not particularly "heavy". Proteins must only be increased if the athlete takes part in strenuous daily training sessions, due to greater turnover. To allow the constant presence of energy reserves, a sufficient amount of highly digestible carbohydrates, lipids and proteins must be eaten, especially before training sessions along with the right quantity of liquids and minerals after the sports activities. **Italian deli meats** can represent a **practical and suitable food** for the specific needs of the sportsperson: rich in complete proteins. They **can supply a good amount of three branched-chain amino acids** necessary to support the production of energy for the organism: valine, isoleucine and leucine can be transformed by the organism into alanine, and from here, into glucose. Physical exercise also requires the presence of an optimal quantity of all micronutrients, therefore Italian deli meats are an excellent choice for the sportsperson's snack. In fact, they supply **B group vitamins** (involved in the transformation of glucose and fatty acids into energy and in the respiration of tissues) and they are rich in **mineral salts** such as iron, phosphorus, potassium and sodium. **Eaten with bread**, they can constitute an **extraordinary means for the easy and natural recovery** of all nutrients lost through exercise and perspiration: **carbohydrates, proteins, lipids and mineral salts**, all highly digestible, assimilable and bioavailable.

Weight-loss, but with pleasure

For a diet to be successful, it is important that very-low calorie diets and maintenance diets are a **pleasure to follow, simple, practical and tasty**: this **will increase the subject's compliance and the probability of the therapy being a success.** To achieve this, some Italian deli meats can be introduced into a very-low calorie regime and into the successive maintenance diet. Thanks to the current reduction of the lipid content and the reduced presence of fats, already a characteristic of some products, dietary choices can be varied easily. In concomitance with the excess weight, the subject could be exposed to **cardiovascular risks**: as well as the alteration of blood parameters concerning **cholesterol and triglycerides** in primis, **arterial hypertension** may also be present, the prevention of which can start at the table, by reducing the intake of salt. With their **reduced salt and lipids content, modern Italian deli meats allow persons following a controlled diet to enjoy the pleasure of eating prosciutto crudo, prosciutto cotto or bresaola at lunch or dinner**, as an alternative to the main dishes given in the diet (tab. 22), the preparation of which, unlike deli meats, often requires salt to be added. Moreover, prosciutto crudo, prosciutto cotto and speck, allow further control of the lipid and calorie intake, as the visible fat can be eliminated thus resulting, in absolute, the leanest choice possible, along with bresaola.

Main dish*	Energy (kcal)	Protein (g)	Fats (g)
Prosciutto cotto, visible fat removed	**54**	**8,5**	**1,8**
1 Egg	64	6,2	4,4
Prosciutto cotto	**69**	**7,9**	**3,8**
Cod	71	17,0	0,3
Bresaola della Valtellina PGI	**76**	**16,6**	**1,0**
Prosciutto di San Daniele PDO, visible fat removed	**88**	**14,5**	**3,3**
Chicken breast	100	23,3	0,8
Trout, fillet	118	20,3	4,1
Cotechino Modena PGI, cooked	**126**	**11,8**	**8,1**
Beef, fillet	127	20,5	5,0
Zampone Modena PGI, cooked	**131**	**11,9**	**8,7**
Mortadella Bologna PGI	**144**	**7,9**	**12,5**
Bass, fillet	146	21,3	6,8
Ricotta	146	8,8	10,9
Speck dell'Alto Adige PGI	**150**	**15,4**	**9,6**
Sea bream, fillet	154	19,7	8,4
Mozzarella	253	18,7	19,5

* Portion equivalent to 100 g of meat, fish or fresh cheese, 50 g of deli meats or 1 egg.

TABLE 17. POSSIBLE DIETETIC MAIN DISHES AND RELATIVE CALORIC, PROTEIN AND LIPID VALUES PER PORTION OF FOOD

Industry has thought about increasing choice, the potentialities for use and the possibilities for preservation: as well as the classical deli meats in pieces or already sliced from the 'salumiere', today there is a wide variety of products packed in various formats and assortments, mixed sliced products, diced or chopped products and preserved in a controlled atmosphere or vacuum packed, in order to satisfy everyone.

How Italian deli meats make your life easier

With their flavour, practicality and versatility that distinguish them, Italian deli meats go beyond being 'just' an alternative to a main dish. For example, they can also be used as **sliced or diced, uncooked or cooked ingredients in imaginative recipes.** Both in the kitchen and on the table, passing from simple and traditional preparations to elaborate and innovative dishes, Italian deli meats can be that 'extra' ingredient that can easily **transform a simple first course into an "out-of-the-ordinary" and complete unique dish. Italian deli meats are a 'concentrated' source of top nutrition substances** also away from home: sometimes with fewer calories than a portion of lean fish or meat. Eating them with carbohydrates from bread, accompanied by sliced vegetables or lettuce leaves, without adding other fatty dressings or salt, they are **a light but complete, balanced and practical meal.** They **must always be eaten with a source of carbohydrates**, so that the nutrients compensate each other: with pasta, rice, polenta, cereals, bread, fruit and vegetables. In fact, vegetables **contain potassium**, a mineral that complements the sodium contained in the deli meats: the balance of these two ions improves transport towards the cell membranes and therefore favours and optimises the functions of the human body.

THE NEW NUTRITIONAL TABLES FOR ITALIAN DELI MEATS

Chemical composition and energy value per 100 g

Italian Deli meats	Water	Protein	Lipids	Cholesterol	Carbohydrates	Energy		NaCl
	g	g	g	mg	g	kcal	kJ	g
Bresaola della Valtellina IGP	59,3	33,1	2,0	63,0	0,4	151	634	4,0
Ciccioli	2,5	45,2	50,6	90,0	0,0	636	2662	1,6
Coppa	34,7	28,9	31,6	127,0	0,0	401	1676	4,9
Cotechino Modena IGP, cotto[1]	54,4	23,6	16,3	86,0	3,2	253	1058	2,2
Mortadella Bologna IGP	56,9	15,7	25,0	72,0	0,0	288	1206	2,4
Pancetta arrotolata[4]	30,0	15,1	52,2	68,0	0,0	530	2217	3,0
Prosciutto cotto	72,2	15,7	7,6	48,6	1,7	138	576	2,1
Prosciutto cotto, sgrassato[2]	74,7	17,0	3,5		1,9	107	446	2,1
Prosciutto cotto scelto	70,0	17,5	9,2	57,1	0,6	155	649	1,9
Prosciutto cotto scelto, sgrassato[2]	73,3	19,4	4,0		0,5	115	483	2,0
Prosciutto cotto alta qualità	66,8	18,0	11,9	50,3	0,8	182	761	1,9
Prosciutto cotto alta qualità, sgrassato[2]	71,8	19,5	5,0		0,9	127	531	2,0
Prosciutto crudo	50,5	27,8	13,7	75,0	0,1	235	985	6,0
Prosciutto crudo, sgrassato[2]	56,1	30,5	5,1	87,0	0,3	169	707	6,9
Prosciutto di Modena DOP	45,6	25,6	22,9	62,0	0,1	309	1293	5,1
Prosciutto di Modena DOP, sgrassato[2]	53,8	30,2	8,9	75,0	0,1	201	842	6,0
Prosciutto di San Daniele DOP	50,2	25,7	18,6	83,0	0,2	271	1135	4,5
Prosciutto di San Daniele DOP, sgrassato[2]	58,0	29,0	6,5	91,0	0,4	176	737	5,1
Salame Milano	37,7	25,4	31,0	104,0	1,1	384	1608	3,9
Salame Napoli	37,3	27,4	29,7	91,0	0,2	378	1580	4,1
Salame ungherese	34,6	23,6	35,7	92,0	1,1	420	1756	4,0
Salamini italiani alla Cacciatora DOP	33,1	28,4	32,7	94,0	0,7	411	1720	4,2
Speck dell'Alto Adige IGP	43,6	30,7	19,1	90,6	1,2	300	1254	4,1
Strutto	0,0	0,0	100,0	108,0	0,0	900	3766	0,1
Wurstel di puro suino	61,7	13,2	21,1	81,0	1,9	250	1046	2,2
Wurstel di puro suino, cotto[3]	60,3	14,6	22,2	84,0	0,3	259	1083	2,3
Zampone Modena IGP, cotto[1]	54,1	23,7	17,4	106,0	2,6	262	1094	1,7

[1] Cotto= cooked. After 20 mins. cooking, inside the packaging and drained of the cooking liquid.

[2] Sgrassato= visible fat removed. Values referring to the product without visible fat.

[3] Cotto= cooked. Stir-fried without the addition of fats and salt.

[4] Arrotolata= rolled up.

Mineral salts: macro-elements per 100 g

Italian Deli meats	Potassium	Magnesium	Calcium	Phosphorus
	mg	mg	mg	mg
Bresaola della Valtellina IGP	630	26	6	269
Ciccioli	425	16	12	164
Coppa	685	27	7	231
Cotechino Modena IGP, cotto[1]	220	9	14	91
Mortadella Bologna IGP	314	13	8	119
Pancetta arrotolata[4]	369	12	3	118
Prosciutto cotto	311	12	6	126
Prosciutto cotto, sgrassato[2]	325	13	7	132
Prosciutto cotto scelto	321	13	5	136
Prosciutto cotto scelto, sgrassato[2]	339	14	5	143
Prosciutto cotto alta qualità	316	13	5	142
Prosciutto cotto alta qualità, sgrassato[2]	341	14	5	153
Prosciutto crudo	621	22	10	196
Prosciutto crudo, sgrassato[2]	683	24	11	216
Prosciutto di Modena DOP	612	24	10	206
Prosciutto di Modena DOP, sgrassato[2]	723	28	12	244
Prosciutto di San Daniele DOP	581	20	9	184
Prosciutto di San Daniele DOP, sgrassato[2]	667	23	10	211
Salame Milano	657	21	19	204
Salame Napoli	667	22	12	208
Salame ungherese	637	17	26	186
Salamini italiani alla Cacciatora DOP	694	21	8	204
Speck dell'Alto Adige IGP	658	27	8	272
Strutto	tr	tr	tr	tr
Wurstel di puro suino	260	10	21	107
Wurstel di puro suino, cotto[3]	223	9	17	77
Zampone Modena IGP, cotto[1]	132	7	12	68

[1] Cotto= cooked. After 20 mins. cooking, inside the packaging and drained of the cooking liquid.

[2] Sgrassato= visible fat removed. Values referring to the product without visible fat.

[3] Cotto= cooked. Stir-fried without the addition of fats and salt.

[4] Arrotolata= rolled up.

Tr= traces

Mineral salts: micro-elements per 100 g

Italian Deli meats	Iron	Zinc	Copper	Manganese
	mg	mg	mg	mg
Bresaola della Valtellina IGP	2,63	4,51	0,07	0,02
Ciccioli	1,15	1,44	0,12	0,03
Coppa	1,33	3,70	0,10	0,03
Cotechino Modena IGP, cotto[1]	1,44	1,63	tr	0,01
Mortadella Bologna IGP	1,03	1,57	tr	0,01
Pancetta arrotolata[4]	0,35	1,28	0,05	0,01
Prosciutto cotto	0,49	1,10	0,08	0,01
Prosciutto cotto, sgrassato[2]	0,52	1,15	0,08	0,01
Prosciutto cotto scelto	0,57	1,28	0,07	0,01
Prosciutto cotto scelto, sgrassato[2]	0,60	1,35	0,08	0,01
Prosciutto cotto alta qualità	0,67	1,45	0,09	0,01
Prosciutto cotto alta qualità, sgrassato[2]	0,72	1,57	0,10	0,01
Prosciutto crudo	0,83	2,08	0,05	0,01
Prosciutto crudo, sgrassato[2]	0,91	2,29	0,05	0,01
Prosciutto di Modena DOP	1,05	2,72	0,06	0,01
Prosciutto di Modena DOP, sgrassato[2]	1,24	3,22	0,07	0,02
Prosciutto di San Daniele DOP	0,92	2,38	0,04	0,01
Prosciutto di San Daniele DOP, sgrassato[2]	1,06	2,73	0,05	0,01
Salame Milano	1,20	3,04	0,13	0,02
Salame Napoli	0,88	2,47	0,11	0,04
Salame ungherese	1,08	2,72	0,12	0,02
Salamini italiani alla Cacciatora DOP	1,02	2,54	tr	0,01
Speck dell'Alto Adige IGP	1,42	2,46	0,07	0,04
Strutto	tr	0,08	0,02	0,00
Wurstel di puro suino	1,00	1,15	0,06	0,01
Wurstel di puro suino, cotto[3]	0,86	0,92	0,04	0,01
Zampone Modena IGP, cotto[1]	1,28	1,50	tr	0,01

[1] Cotto= cooked. After 20 mins. cooking, inside the packaging and drained of the cooking liquid.

[2] Sgrassato= visible fat removed. Values referring to the product without visible fat.

[3] Cotto= cooked. Stir-fried without the addition of fats and salt.

[4] Arrotolata= rolled up.

Tr= traces

Selenium is also included among the micro-elements, subject of the 2011 analysis. This data is still being processed.

Vitamins per 100 g

Italian Deli meats	Thiamine	Riboflavin	Niacin	Vit. B6	Vit. B12	Vit. E
	mg	mg	mg	mg	µg	mg
Bresaola della Valtellina IGP	0,41	0,13	2,74	0,52	0,77	0,14
Ciccioli	0,00	0,00	0,00	0,00	0,00	0,16
Coppa	0,61	0,18	6,02	0,14	0,68	0,16
Cotechino Modena IGP, cotto[1]	0,09	0,09	2,68	0,06	0,52	0,28
Mortadella Bologna IGP	0,24	0,12	4,19	0,27	0,28	0,28
Pancetta arrotolata[4]	0,36	0,06	2,85	0,06	0,51	0,27
Prosciutto cotto	0,67	0,12	4,40	0,37	0,09	0,09
Prosciutto cotto, sgrassato[2]	0,70	0,13	4,60	0,39	0,09	
Prosciutto cotto scelto	0,54	0,13	4,70	0,43	0,13	0,13
Prosciutto cotto scelto, sgrassato[2]	0,57	0,14	4,97	0,45	0,13	
Prosciutto cotto alta qualità	0,69	0,14	4,70	0,44	0,13	0,13
Prosciutto cotto alta qualità, sgrassato[2]	0,74	0,15	5,07	0,47	0,14	
Prosciutto crudo	0,58	0,19	5,45	1,00	0,38	0,11
Prosciutto crudo, sgrassato[2]	0,64	0,21	5,99	1,10	0,42	
Prosciutto di Modena DOP	0,59	0,20	5,57	1,00	0,33	
Prosciutto di Modena DOP, sgrassato[2]	0,70	0,24	6,58	1,18	0,39	
Prosciutto di San Daniele DOP	0,68	0,20	5,13	1,04	0,47	0,13
Prosciutto di San Daniele DOP, sgrassato[2]	0,78	0,23	5,89	1,19	0,54	
Salame Milano	0,53	0,17	4,97	0,16	0,56	0,08
Salame Napoli	0,51	0,14	5,22	0,14	0,44	0,11
Salame ungherese	0,46	0,17	3,80	0,13	0,52	0,09
Salamini italiani alla Cacciatora DOP	0,50	0,14	7,73	0,87	0,52	0,09
Speck dell'Alto Adige IGP	0,41	0,16	4,10	0,47	0,33	0,11
Strutto	0,00	0,00	0,00	0,00	0,00	0,66
Wurstel di puro suino	0,21	0,08	1,61	0,05		0,17
Wurstel di puro suino, cotto[3]	0,24	0,05	1,82	0,06		0,17
Zampone Modena IGP, cotto[1]	0,06	0,08	2,58	0,03	0,46	0,25

[1] Cotto= cooked. After 20 mins. cooking, inside the packaging and drained of the cooking liquid.

[2] Sgrassato= visible fat removed. Values referring to the product without visible fat.

[3] Cotto= cooked. Stir-fried without the addition of fats and salt.

[4] Arrotolata= rolled up.

Saturated fatty acids %

Italian Deli meats	C4:0÷C10:0	C12:0	C14:0	C15:0	C16:0	C17:0	C18:0	C20:0	C22:0	Total Saturates
Bresaola della Valtellina IGP	0,00	0,00	0,03		0,39	0,02	0,28	0,00	0,00	**0,72**
Ciccioli	0,05	0,05	0,75	0,03	11,17	0,13	5,85	0,08		**18,10**
Coppa	0,04	0,03	0,44	0,01	7,16	0,07	4,04	0,04		**11,84**
Cotechino Modena IGP, cotto[1]	0,02	0,01	0,20	0,02	3,21	0,02	1,60	0,01		**5,09**
Mortadella Bologna IGP	0,02	0,03	0,39	0,02	5,01	0,09	2,68	0,02		**8,26**
Pancetta arrotolata[4]	0,05	0,05	0,76	0,02	10,64	0,10	5,40	0,08		**17,11**
Prosciutto cotto	0,07	0,01	0,12		1,97	0,03	0,98	0,01	0,00	**3,20**
Prosciutto cotto, sgrassato[2]	0,03	0,01	0,05		0,86	0,01	0,43	0,01	0,00	**1,41**
Prosciutto cotto scelto	0,08	0,02	0,16		2,43	0,04	1,25	0,01	0,00	**3,99**
Prosciutto cotto scelto, sgrassato[2]	0,03	0,01	0,07		1,01	0,01	0,52	0,01	0,00	**1,66**
Prosciutto cotto alta qualità	0,08	0,02	0,19		2,86	0,03	1,45	0,02	0,00	**4,65**
Prosciutto cotto alta qualità, sgrassato[2]	0,03	0,01	0,08		1,15	0,01	0,58	0,01	0,00	**1,87**
Prosciutto crudo	0,03	0,02	0,22		3,10	0,03	1,41	0,02	0,00	**4,84**
Prosciutto crudo, sgrassato[2]	0,01	0,01	0,08		1,10	0,01	0,50	0,01	0,00	**1,72**
Prosciutto di Modena DOP	0,05	0,03	0,37		5,10	0,05	2,29	0,03	0,00	**7,92**
Prosciutto di Modena DOP, sgrassato[2]	0,02	0,01	0,14		1,89	0,02	0,85	0,01	0,00	**2,94**
Prosciutto di San Daniele DOP	0,03	0,02	0,30		4,12	0,04	1,93	0,03	0,00	**6,47**
Prosciutto di San Daniele DOP, sgrassato[2]	0,01	0,01	0,10		1,38	0,01	0,64	0,01	0,00	**2,16**
Salame Milano	0,04	0,04	0,48	0,02	6,95	0,08	3,35	0,05		**10,99**
Salame Napoli	0,04	0,04	0,45	0,02	6,71	0,08	3,30	0,04		**10,67**
Salame ungherese	0,04	0,04	0,55	0,02	7,68	0,09	3,70	0,05		**12,19**
Salamini italiani alla Cacciatora DOP	0,03	0,04	0,31	0,05	6,72	0,08	3,66	0,04		**10,93**
Speck dell'Alto Adige IGP	0,03	0,06	0,37		4,07	0,06	2,00	0,02	0,00	**6,62**
Strutto	0,11	0,11	1,46	0,03	22,21	0,25	12,25	0,11		**36,53**
Wurstel di puro suino	0,02	0,02	0,31	0,01	4,83	0,06	2,54	0,03		**7,83**
Wurstel di puro suino, cotto[3]	0,02	0,03	0,29	0,01	4,47	0,06	2,50	0,03		**7,42**
Zampone Modena IGP, cotto[1]	0,02	0,02	0,23	0,02	3,43	0,04	1,69	0,01		**5,45**

[1] Cotto= cooked. After 20 mins. cooking, inside the packaging and drained of the cooking liquid.

[2] Sgrassato= visible fat removed. Values referring to the product without visible fat.

[3] Cotto= cooked. Stir-fried without the addition of fats and salt.

[4] Arrotolata= rolled up.

Unsaturated fatty acids: monounsaturated%

Italian Deli meats	C14:1	C16:1	C17:1	C18:1	C20:1	C22:1	Total Monounsaturated
Bresaola della Valtellina IGP	0,01	0,05	0,02	0,61	0,00	0,00	**0,69**
Ciccioli		1,42	0,15	22,10	0,39		**24,07**
Coppa		0,84	0,07	13,40	0,24		**14,55**
Cotechino Modena IGP, cotto[1]		0,50	0,05	7,48	0,12		**8,15**
Mortadella Bologna IGP		0,70	0,09	11,05	0,23		**12,06**
Pancetta arrotolata[4]		1,47	0,14	23,57	0,46		**25,65**
Prosciutto cotto	0,00	0,22	0,03	3,21	0,05	0,00	**3,52**
Prosciutto cotto, sgrassato[2]	0,00	0,10	0,01	1,41	0,02	0,00	**1,55**
Prosciutto cotto scelto	0,00	0,27	0,03	3,84	0,06	0,00	**4,21**
Prosciutto cotto scelto, sgrassato[2]	0,00	0,11	0,01	1,59	0,03	0,00	**1,75**
Prosciutto cotto alta qualità	0,00	0,32	0,03	5,00	0,08	0,00	**5,43**
Prosciutto cotto alta qualità, sgrassato[2]	0,00	0,13	0,01	2,01	0,03	0,00	**2,18**
Prosciutto crudo	0,00	0,39	0,04	5,81	0,11	0,00	**6,35**
Prosciutto crudo, sgrassato [2]	0,00	0,14	0,01	2,06	0,04	0,00	**2,26**
Prosciutto di Modena DOP	0,01	0,66	0,06	9,83	0,21	0,01	**10,77**
Prosciutto di Modena DOP, sgrassato[2]	0,00	0,25	0,02	3,65	0,08	0,00	**4,00**
Prosciutto di San Daniele DOP	0,00	0,51	0,04	7,86	0,16	0,00	**8,58**
Prosciutto di San Daniele DOP, sgrassato[2]	0,00	0,17	0,01	2,62	0,05	0,00	**2,86**
Salame Milano		0,94	0,10	13,94	0,26		**15,24**
Salame Napoli		0,88	0,09	13,49	0,25		**14,71**
Salame ungherese		1,03	0,11	16,02	0,30		**17,46**
Salamini italiani alla Cacciatora DOP		0,92	0,11	14,34	0,27		**15,64**
Speck dell'Alto Adige IGP	0,01	0,54	0,07	7,60	0,14	0,00	**8,36**
Strutto		2,60	0,26	42,32	0,78		**45,96**
Wurstel di puro suino		0,63	0,07	9,36	0,17		**10,22**
Wurstel di puro suino, cotto[3]		0,57	0,07	8,75	0,16		**9,56**
Zampone Modena IGP, cotto[1]		0,56	0,04	8,08	0,11		**8,78**

[1] Cotto= cooked. After 20 mins. cooking, inside the packaging and drained of the cooking liquid.

[2] Sgrassato= visible fat removed. Values referring to the product without visible fat.

[3] Cotto= cooked. Stir-fried without the addition of fats and salt.

[4] Arrotolata= rolled up.

Unsaturated fatty acids: poliunsaturated%

Italian Deli meats	C18:2	C18:3	C20:2	C20:3	C20:4	C20:5	C22:6	Total Poliunsaturated
Bresaola della Valtellina IGP	0,21	0,05			0,09	0,04	0,01	**0,40**
Ciccioli	5,39	0,24	0,22	0,05	0,18			**5,86**
Coppa	3,31	0,14	0,13	0,03	0,14			**3,61**
Cotechino Modena IGP, cotto[1]	1,98	0,09	0,06	0,01	0,13			**2,21**
Mortadella Bologna IGP	3,06	0,16	0,14	0,00	0,11			**3,34**
Pancetta arrotolata[4]	6,16	0,28	0,29	0,06	0,17			**6,66**
Prosciutto cotto	0,44	0,03			0,01	0,01	0,00	**0,50**
Prosciutto cotto, sgrassato[2]	0,19	0,01			0,00	0,00	0,00	**0,22**
Prosciutto cotto scelto	0,48	0,04			0,01	0,01	0,00	**0,54**
Prosciutto cotto scelto, sgrassato[2]	0,20	0,02			0,00	0,00	0,00	**0,23**
Prosciutto cotto alta qualità	1,09	0,07			0,06	0,02	0,00	**1,23**
Prosciutto cotto alta qualità, sgrassato[2]	0,44	0,03			0,02	0,01	0,00	**0,49**
Prosciutto crudo	1,60	0,12			0,14	0,01	0,01	**1,89**
Prosciutto crudo, sgrassato [2]	0,57	0,04			0,05	0,00	0,00	**0,67**
Prosciutto di Modena DOP	2,78	0,14			0,20	0,02	0,01	**3,15**
Prosciutto di Modena DOP, sgrassato[2]	1,03	0,05			0,07	0,01	0,00	**1,17**
Prosciutto di San Daniele DOP	2,36	0,11			0,19	0,01	0,01	**2,69**
Prosciutto di San Daniele DOP, sgrassato[2]	0,79	0,04			0,06	0,00	0,00	**0,90**
Salame Milano	2,98	0,10	0,14	0,02	0,05			**3,16**
Salame Napoli	3,67	0,17	0,15	0,03	0,12			**3,99**
Salame ungherese	3,90	0,16	0,15	0,02	0,09			**4,18**
Salamini italiani alla Cacciatora DOP	3,93	0,18	0,16	0,01	0,16			**4,28**
Speck dell'Alto Adige IGP	2,74	0,23			0,26	0,02	0,01	**3,26**
Strutto	11,48	0,60	0,45	0,07	0,17			**12,33**
Wurstel di puro suino	2,66	0,15	0,10	0,02	0,11			**2,95**
Wurstel di puro suino, cotto[3]	2,70	0,17	0,10	0,03	0,16			**3,06**
Zampone Modena IGP, cotto[1]	2,09	0,10	0,04	0,02	0,15			**2,36**

[1] Cotto= cooked. After 20 mins. cooking, inside the packaging and drained of the cooking liquid.

[2] Sgrassato= visible fat removed. Values referring to the product without visible fat.

[3] Cotto= cooked. Stir-fried without the addition of fats and salt.

[4] Arrotolata= rolled up.

Nitrites and Nitrates

Italian Deli meats	Nitrites	Nitrates
	ppm	ppm
Bresaola della Valtellina IGP	2,4	30,2
Ciccioli	ass	18,0
Coppa	ass	11,0
Cotechino Modena IGP, cotto[1]	0,0	5,0
Mortadella Bologna IGP	ass	11,0
Pancetta arrotolata[4]	ass	21,0
Prosciutto cotto	8,1	14,4
Prosciutto cotto, sgrassato[2]		
Prosciutto cotto scelto	4,6	5,5
Prosciutto cotto scelto, sgrassato[2]		
Prosciutto cotto alta qualità	4,7	13,6
Prosciutto cotto alta qualità, sgrassato[2]		
Prosciutto crudo	ass	ass
Prosciutto crudo, sgrassato [2]		
Prosciutto di Modena DOP	ass	ass
Prosciutto di Modena DOP, sgrassato[2]		
Prosciutto di San Daniele DOP	ass	ass
Prosciutto di San Daniele DOP, sgrassato[2]		
Salame Milano	ass	14,0
Salame Napoli	ass	29,0
Salame ungherese	ass	19,0
Salamini italiani alla Cacciatora DOP	ass	16,0
Speck dell'Alto Adige IGP	1,2	23,3
Strutto	ass	ass
Wurstel di puro suino	ass	13,0
Wurstel di puro suino, cotto[3]	2,0	17,0
Zampone Modena IGP, cotto[1]	ass	4,0

[1] Cotto= cooked. After 20 mins. cooking, inside the packaging and drained

[2] Sgrassato= visible fat removed. Values referring to the product without v

[3] Cotto= cooked. Stir-fried without the addition of fats and salt.

[4] Arrotolata= rolled up.

Ass= absent

Bibliography

III Conferenza Internazionale CIISCAM. Piramide della Dieta Mediterranea moderna. (III CIISCAM International Conference. Modern Mediterranean Diet Pyramid). 2009.

ASS.I.CA. I Salumi Italiani: garanzia di qualità dall'antichità ad oggi (Italian Deli Meats: guarantee of quality from the ancient times to the present day).

Ballarini G. Piccola storia della salumeria italiana (Short history of Italian "salumeria"). Edra, 2003.

Ballarini G. Salumi e Salute. Il vero e il falso di ogni giorno (Deli meats and Health. Everyday true and false points). Edagricole, 2005.

Cannella C., Bernardi E. Salumi italiani. La tradizione al servizio dell'alimentazione moderna. Casa Editrice Università La Sapienza (Tradition at the Service of the Modern Diet, Publisher the La Sapienza), 2006.

Commissione europea. Direttiva 2008/100/CE del 28 ottobre 2008 che modifica la direttiva 90/496/CEE del Consiglio relativa all'etichettatura nutrizionale dei prodotti alimentari per quanto riguarda le razioni giornaliere raccomandate, i coefficienti di conversione per il calcolo del valore energetico e le definizioni. Gazzetta ufficiale dell'Unione europea L 285/9. 29.10.2008. (European Commission. 2008/100/CE Directive dated 28 October 2008 amending the 90/496/EEC Directive of the Council relative to the nutritional labelling of food products regarding recommended daily intake, coefficients for the conversion of food energy and definitions. European Union Official Journal L 285/9. 29.10.2008.)

European Commission. Scientific Committee on Food. Opinion of the Scientific Committee on Food on the revision of reference values for nutrition labeling. 6 March 2003.

European Food Safety Authority (EFSA). Scientific Opinion on Dietary Reference Values for fats, including saturated fatty acids, polyunsaturated fatty acids, monounsaturated fatty acids, trans fatty acids, and cholesterol. Adopted: 4 December 2009; Published: 25 March 2010.

Leclercq C., Arcella D., Piccinelli R., Sette S., Le Donne C., Turrini A. (on the behalf of the INRAN SCAI 2005-06 study group). The Italian national Food

Consumption Survey INRAN SCAI 2005-2006. Main results in terms of food consumption. Public Health Nutrition, 2009.

Ministero della Salute – Ministero della Pubblica Istruzione. Progetto 'Sistema di indagini sui rischi comportamentali in età 6-17 anni'.'OKkio alla SALUTE'. Risultati 2010. (Ministry of Health – Ministry of Education. 'System of invetigations on behavioural risks from the age 6-17' Project.' All eyes on HEALTH '. Results 2010.)

Ministero delle Politiche Agricole, Alimentari e Forestali (MIPAAF). Elenco delle denominazioni italiane, iscritte nel Registro delle denominazioni di origine protette e delle indicazioni geografiche protette (Regolamento CE n. 510/2006 del Consiglio del 20 marzo 2006). Aggiornato all'8 settembre 2011 (Ministry of Agricultural, Food and Forestry Policies (MIPAAF). List of Italian designations, recorded in the Register of Protected Geographical Indications and Protected Designations of Origin (CE regulation n. 510/2006 of the Council dated 20 March 2006). Updated 8 September 2011).

Gruppo di lavoro del Ministero della Salute (D.M. 1.09.2003): Elaborazione del tipo di dieta verso cui indirizzare il cittadino, consigliando le opportune variazioni. Relazione conclusiva. Giugno 2004 (Ministry of Health work unit (M.D. 1.09.2003): Elaboration of the type of diet towards which the citizen must be guided, recommending appropriate variations. Conclusive report. June 2004).
Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione (INRAN). Linee guida per una Sana Alimentazione Italiana. 2003 (National Research Institute for Food and Nutrition (INRAN). Guidelines for a healthy Italian diet, 2003).

Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione (INRAN). Tabelle di Composizione degli Alimenti. 2000 (National Research Institute for Food and Nutrition (INRAN). Food Composition Tables, 2000).

Istituto di Scienza dell'Alimentazione, Università La Sapienza. Piramide Alimentare Italiana. Roma. 2005 (Institute of Food Science, La Sapienza University. Italian Diet Pyramid. Rome. 2005).

Istituto Superiore di Sanità, Centro Nazionale di Epidemiologia, Sorveglianza e Promozione della Salute (Cnesps). Nutrizione e salute. Luglio 2011 (Superior Health Institute, National Epidemiology Centre, Surveillance and Propmotion of Health (Cnesps). Nutrition and health. July 2011).

IVSI. Carni e salumi tra nutrizione e cultura: quali novità? Edra, 2002. IVSI. I nostri alimenti. Aggiornamento sui valori nutrizionali dei salumi italiani. Edra, 1997 (IVSI. Meats and Deli meats between nutrition and culture: what's the news? Edra, 2002. IVSI. Our foodstuffs. Update of the nutritional values of Italian deli meats, Edra, 1997).

IVSI. La Salumeria Italiana in una corretta alimentazione. Tradizione, produzione e caratteristiche nutrizionali (IVSI. Italian Salumeria in a correct diet. Tradition, production and nutritional characteristics).

Società Italiana di Nutrizione Umana (SINU) – Gruppo di lavoro Intersocietario per la Riduzione del Consumo di Sodio in Italia (GIRCSI). Meno Sale e più Salute contro l'ipertensione e le malattie cardiovascolari. Progetto WASH (World Action on Salt & Health). Marzo 2011 (Italian Society for Human Nutrition (SINU) – Intercompany work group per for the Reduction of Sodium Consumption in Italy (GIRCSI). Less Salt and More Health against hypertension and the cardiovascular diseases. WASH Project (World Action on Salt & Health). March 2011).

The Istituto Salumi Italiani Tutelati (ISIT) (Association of the Protected Italian Deli Meats Industries) co-ordinates the PDO and PGI protection consortiums of the deli meats sector at a strategic and operational level, boasting strong coverage in the typical productions sector. It also supports the protected productions that do not yet have their own representative body. The following consortiums are part of ISIT: Consorzio Cacciatore, Consorzio del Culatello di Zibello, Consorzio del Prosciutto di Modena, Consorzio del Prosciutto San Daniele, Consorzio del Prosciutto Toscano, Consorzio del Salame Brianza, Consorzio del Salame di Varzi, Consorzio Mortadella Bologna, Consorzio per la tutela del nome Bresaola della Valtellina, Consorzio di tutela dei Salumi di Calabria a DOP, Consorzio Salame Piemonte, Consorzio Salumi Tipici Piacentini, Consorzio tutela Speck Alto Adige, Consorzio Zampone Modena Cotechino Modena.

The Istituto Valorizzazione Salumi Italiani (IVSI) is a voluntary and non-profit consortium, established in 1985 to satisfy the growing requests by consumers for more information and with the purpose of enhancing the image of Italian deli meats. The IVSI spreads knowledge of the production, nutritional and cultural aspects of the deli meats in Italy and abroad, by promoting a gastronomic heritage, which is one of its kind worldwide.

The Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione (INRAN) (National Research Institute on Food and Nutrition), performs research, information and promotion activities in the foodstuff and nutrition field in order to protect the consumer and qualitatively improve agri-foodstuff productions. It is an important reference for the agri-foodstuff industry and the Italian people.

The Stazione Sperimentale per l'Industria delle Conserve Alimentari (SSICA) (Experimental Station for the Food Preserving Industry), is a special company that is part of the Parma Chamber of Commerce, engaged in research, communication and training in the agri-foodstuffs sector, supplying assistance and consultancy to companies and public institutions.

Contribution from the Italian Ministry of Agriculture – Ministero delle Politiche Agricole Alimentari e Forestali - DM 15767 / 2010