Pulses: nutritious seeds for a sustainable future

Lentils, chickpeas, beans, peas, grass peas, lupins, fava beans and other pulses will be the protagonists of 2016, proclaimed by the United Nations "International Year of Pulses", with the aim of increasing awareness on the importance of eating pulses for human health and food security. Their high nutritional value, in fact, makes them perfect to combat malnutrition, understood both as lack of food and as, on the contrary, excess intake of high-calorie food. Despite being an excellent food that should never be missing in our diet, pulses today appear increasingly rarely on our tables. The modern diet is in fact based on a greater use of animal proteins and the pace of life today has oriented consumer choices to convenience foods.

Let's see together what makes these seeds so special and what are the reasons why they should always be present in our diet.

Pulses, a great family of seeds

Pulses are the edible seeds of plants belonging to the legume family and, together with cereals, are the foods that the man has used since ancient times. Pulses are commonplace worldwide and have an amazing variety of types. Many varieties are grown only in small areas: these are products kept alive thanks to the regional gastronomic traditions, which are therefore unavailable in the normal distribution channels.

Not everyone knows that pulses are a complete food because they are rich in nutrients, primarily proteins: in the dry state their content amounts to 20 to 40%, a percentage almost double that of cereals and very close to that of products of animal origin. They are also low in fat, from 2 to 5%, and rich in fibre, both insoluble, present mainly in the skin and useful for regular bowel function, and soluble, which help to control the levels of glucose and cholesterol in the blood. The energy value of legumes is among the highest in the plant world: carbohydrates, in fact, account for about 50% of their weight. They contain a fair amount of phosphorus, potassium, calcium, iron, B vitamins and, when they are fresh, also vitamin C.

Let's now see what are the most common pulses:

Beans

Beans are the most well-known pulses, so much so to be elected official representatives of legumes. The bean plant is native to Central America and was imported to Europe after the discovery of America by Christopher Columbus. There are 300 known varieties of beans, sixty or so of which are edible; the best known are the borlotto, the cannellino, the Mexican bean, the Spanish bean and the cowpea.

Peas

The origins of this pulse are ancient. The first records date back to 2100 BC in Asia Minor. Peas can only be found fresh in the spring and compared to other pulses have less calories because they contain few lipids. They also contain a fair amount of carbohydrates, proteins, minerals and fibre, which exert a beneficial effect on the intestine and cardiovascular system.

Chickpeas

These are an ancient crop, native to the Middle and Far East, which quickly spread throughout the Mediterranean. Currently they rank third in world consumption, after soy and beans. Chickpeas are a pure concentrate of energy, thanks to the 6% of fat and 55% of carbohydrates they contain. Despite chickpeas also being rich in other nutritional properties, they are still underrated in Italy even if, in reality, they are very versatile since they can be ground into flour for use in various dishes such as Spanish omelettes.

Fava beans

A very ancient pulse, native to Asia and known in ancient Egypt. It can be traced back to the Bronze and Iron Ages and the ancient Romans made extensive use of them. Fava beans are rich in protein and plant fibre, but low in fat, a characteristic that is common to other pulses. They are available fresh in the spring but we can also enjoy them all year round because they can be easily found in the dry version. Unfortunately not everyone can eat them due to favism, an
inherited genetic disease due to the lack of a particular enzyme in the red blood cells, which can cause even severe anaemia crises.

**Lentils**
This could be the most ancient legume cultivated and consumed by man. Small edible seeds have been found in Egyptian tombs, but also in Turkey, dating back as far as 7000 BC. Lentils were widespread in the Mediterranean as the habitual food of poor Greeks and Romans due to their low cost and high nutritional value. Lentils are rich in protein, calcium and iron. These are the most easily digestible pulses, especially in the red peeled variant. Thanks to the presence of flavonoids, lentils have excellent antioxidant properties.

**Soy**
Soy is the queen of pulses thanks to its many nutritional qualities. It is available in the dry version, to be soaked and boiled, but also as sprouts, edamame (soybeans), tempeh ("soy meat" obtained from yellow fermented soybeans) tofu (soy "cheese"), milk and miso (a condiment obtained from the fermentation of soy and a cereal). Soy is known to be an antioxidant which, due to its of isoflavone content, contributes to the prevention of cardiovascular diseases. It is always a good idea to associate it with cereals to complete the nutrient content.

**Lupins**
Already known to the Romans, the lupin has always been a poor food. Thanks to this pulse, a good dose of protein could be obtained, but also of minerals such as iron and potassium as well as vitamins. Lupins can be eaten as delicious aperitif snacks or as ingredients for soups. The flour obtained by grinding the dried seeds can be used to treat certain skin diseases, as a remedy for diabetes and for eliminating worms.

**Grass peas**
These are lesser known pulses and therefore to be revalued. The grass pea plant is native to the Middle East and for many centuries it was of great importance both for human consumption as well as for forage. Since the last century, its use has become less common in Italy, so much so as to have been almost abandoned, and only in recent years is it showing signs of recovery. In Asia and in Africa, on the other hand, cultivation of the grass pea is widespread and covers one third of the protein requirement per capita.

**Peanuts**
Perhaps not everyone knows that… peanuts are pulses! In fact, they are commonly more closely associated with hazelnuts, almonds and other types of oily seeds since they are also known as "monkey nuts". The peanut is native to Brazil, now grown worldwide, especially in Africa and Asia. It contains no cholesterol, has an excellent antioxidant properties and is rich in lipids and oleic acid.

**Nutritious seeds for a sustainable future**
Pulses are not only an excellent food but they are also sustainable! Let's find out right away why pulses are not only good for our body, but also for our planet. First of all, the cultivation of grain legumes requires a low consumption of natural resources, particularly water and soil. According to FAO data, the production of lentils or split peas requires 50 litres of water per kilo. In contrast, a kilo of chicken meat requires 4,325 litres, a kilo of beef 13,000. The reduced water footprint also makes the cultivation of pulses an intelligent choice in arid areas and regions prone to drought. Secondly, pulses are "nitrogen-fixing" plants, that is they are able to convert atmospheric nitrogen into nitrogen compounds thanks to the symbiosis that is established with certain microorganisms (*Rhizobium leguminosarum*) of the soil in their roots, and therefore they require minimal use of common nitrogen fertilizers. This means that pulses have a low carbon footprint, i.e. low emissions of greenhouse gases linked to the chemical synthesis of pesticides and fertilizers for agriculture. Cultivating pulses therefore improves the fertility of the soil and reduces its erosion, enriching it with nutrients and a bacterial microflora which favours the practice of crops in succession, such as for example, the rotation between cereal crops (wheat, barley and spelt) and pulses which, compared to cereal crops only, leads to increased efficiency of nitrogen use. Improving the overall condition of the soil, therefore, pulses foster biodiversity, understood as the genetic
The recovery of the enormous genetic variability of pulses can be a valuable resource for the farmer who can select the varieties most suitable to the changing climatic conditions of our times. This would benefit especially developing countries, where pulses are consumed every day since they are often the only source of protein. Fostering the production and consumption of pulses in these areas means safeguarding small-scale family and village farming and thus encouraging local economies.

“Nutritious seeds for a sustainable future”, the slogan launched by FAO for 2016, sums up in a sentence the importance of pulses, not only for nutrition but also for the preservation of natural resources, given that the fight against malnutrition is also an environmental challenge.

The objective of FAO, the UN Food and Agriculture Organization, for this year dedicated to pulses is to promote a series of initiatives in order to raise awareness of the value of these foods and sensitise:

- public opinion to learn about the nutritional quality of pulses and make greater use of them as ingredients in their dishes;

- farmers to revalue the biodiversity of pulses and use them in crop rotation with a view to organic and sustainable farming;

- researchers to learn more about the chemical composition and nutritional quality typical of the various varieties of pulses worldwide in order to create a more detailed database.

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