

SOYA, THE MEAT OF THE EAST: A TREASURE-TROVE OF DRUGS WITH A PREVENTIVE ACTION

Dr. E. Riva

Chinese civilization is – we know – of very ancient origin and can lay claim to an ancient therapeutic tradition. Paternity of Chinese medicine is attributed to the Emperor Cen-Nong, who lived in the 27th century BC and taught the Chinese how to use herbs, compiling the first *Pen-t'sao* (“origin of herbs”), namely the first treatise on medicine in the world.

This naturally is an interpretation that is highly controversial amongst historians as the oldest *Pen-t'sao* that exist today date back only to the first century BC. Their dominant theme is an eternal and immutable principle, Tao, which appears in the opposing signs of yin and yang: a philosophical principle which has influenced the whole of Chinese medicine until the present day. The *Pen-t'sao* listed hundreds of drugs which played a very important role in Chinese medicine and which made a fundamental contribution to Western pharmacology.

Let us take for example tea which, according to a Chinese

legend, originated from the lashes of a monk who, for fear of falling asleep and neglecting his prayers, tore them out and threw them on the ground.

The Buddha then had a sapling of tea (*Camelia siniensis* Sims.) sprout from the lashes to let the man dispel sleep. Tea, which very probably arrived on the plateaux of China from Korea, was adopted as a sort of national beverage: a whole book was even written about it – the *Cha Ching* – which dates back to the 8th century AD and describes the picking of the leaves, the utensils used to prepare it and the meanings that the beverage represented as the “reflection of the harmony of the universe”.

The idea that immortality could be acquired through taking medicinal substances was a dominant conviction in Chinese medicine with manuals listing a conspicuous quantity of remedies which have the aim of “prolonging life”.

And it was again the “divine farmer”, CEN-HONG, who described the extraordinary properties of

rhubarb and calamus, plants which had been recognized since ancient times as milestones in traditional medicine and very widely used as general tonics, against constipation, diuretics and above all as antidotes against poisoning.

Calamus in particular became very famous amongst the Chinese because, according to the concepts of Taoism, it was identified as a drug capable of guaranteeing immortality.

The so-called “pills of immortality”, based on powder of calamus, yellow thistle, gold and jade, were famous and believed to ensure rejuvenation, intellectual vigour, insensitivity to the cold, night vision, physical strength and a life span of more than a century.

Under the name of *ciang*, the old *Pen-t'sao* mentioned a medicament that was used to relieve the irritation of dermatosis: this was camphor (*Cinnamomum camphora* Nees).

Although the drug had been widely used by the Chinese for thousands of years, and Marco

Polo reports having seen the trees in the forest of Fokien, it is not known when extraction of natural camphor, the only real and effective medicament from this plant, began.

We also have some very curious accounts from China on the use of cloves. It is said that in very ancient times, court officials, before addressing their sovereign, were in the habit of chewing cloves to perfume their breath.

This shows that China held the monopoly of this important spice (as can also be deduced from Marco Polo's accounts) but *Syzygium* is in fact a plant native to the Moluccas.

Opium was highly appreciated by the ancients as an antidote, although its use as a source of pleasure gained ground in China and spread so rapidly as to compel the imperial government to prevent the import of the drug. But as the majority of opium came from India, Great Britain – which had intensified the production of opium in India as much as possible – greatly damaged by the Chinese measure, then waged war on China. This war lasted until the middle of the 19th century and came to an end with a treaty forcing China to open her ports to British ships carrying opium. Chinese pharmacology is therefore very rich in medicaments with thousands of them, and very many are still officially used in modern Oriental therapy. This is due to the fact that in China traditional medicine has continued to be studied, but with its application to modern scientific research

methods. If, on the one hand, Chinese medicine today presents the same picture as thousands of years ago, on the other it enriches science with new and important discoveries, obviously the result of a modern technique that has been developed alongside a strong and consolidated tradition.

A concrete example comes from recent clinical research carried out at the Chinese university of Hong Kong on 130 women, aged between thirty and forty, showing a significant reduction of the mineral density in bone marrow in relation to a high consumption of soya.

Soya has in fact been both a food and a medicament for a very long time in China and LI-CE-CEN, one of the most eminent figures in Chinese medical literature and also the author of a *Pen-t'sao*, mentions a vast number of drugs amongst which he gives great importance to the so-called *siao-ten*, namely, soya. The plant, known in China both as a food and as a medicament, was considered a good diuretic and febrifuge as well as a reasonable regulator of blood circulation.

China is probably the place where soya originated and there the plant was exalted as a gift from the gods to mankind for its great therapeutic and food value; in China the rules of growing this plant were handed down from one generation to the next for centuries.

Considering its fundamental role as a source of protein to supple-

ment the diets of the peoples of eastern Asia, where there is a notorious lack of meat, soya with time has also conquered the other continents and spread, especially in the 16th century, to Europe and then America in the early 19th century where it began to be grown on a wide scale.

Further selections and experiments on cross-breeding after the Second World War then allowed the production of varieties of soya with growing methods that were more suitable for the systems of production. Its name is *Glycine soja* and it grows as a bush with angular herbaceous and branched stalks and leaves varying in colour from green to yellowish.

Its fruit is a pulse with a somewhat arcuate shape containing some seeds (beans) of variable dimensions and round or oval in shape, black, brown or yellow-greenish in colour, from which oil of soya and soya flour are obtained.

Soya beans are one of the most valuable food and dietary resources on the earth: their nutritional importance lies mainly in the fact that they contain more proteins than all other pulses but fewer saturated fats than oily seeds and a fair quantity of vitamins and mineral salts.

The *proteins* are present in a percentage that is close to 40%, whilst the glucide substances, made up of polysaccharides for the most part, are close to a value of 30%.

The lipid content can, on the

other hand, reach 20% and this fraction is made up of *triglycerides* with a predominance of *linoleic, oleic and linolenic acid and lecithin*. Unlike all other proteins of plant origin, those of soya therefore have a biological value that is close to that of animal proteins with a well balanced composition of essential amino acids.

This makes it preferable to other fats as a dietary foodstuff suitable for individuals with high blood pressure and hypercholesterolemia.

The *phospholipid lecithin* takes on particular importance in soya-based diets as it is a very important factor of controlling the rate of hematic cholesterol. Free cholesterol coming from the tissues is first transformed in the blood into esterified cholesterol by lecithin-cholesterol-acyltransferase (LCAT), an enzyme which transfers a fatty acid from lecithin to cholesterol, after which the resulting linoleate cholesterol – as the diet is rich in linoleic acid – is more quickly transformed into bile acids and then excreted. Lecithin is also a phospholipid capable of supplying acetylcholine to the brain cells and therefore a very useful dietary complement to be included in programmes of prevention and rehabilitation of the elderly with pre-occupying cognitive deficiencies. In any case, a soya-rich diet certainly offers good prospects not only in the treatment of a number of pathologies, but above all in the prevention of some illnesses

such as osteoporosis.

To return to the clinical research carried out at the Scientific Meeting of the Association of Epidemiology at the University of Hong Kong, the conclusion has been reached, after three years of experimentation, that the large consumption of soya by young Chinese women is an extraordinary help for them to maintain the bony mass of their joints.

The so-called *anti-osteoporosis action* of soya reveals itself through a significant reduction of the physiological loss of minerals in the bone marrow of women of a critical age and today in China is considered a valid alternative to the substitutive hormonal therapies frequently used in these cases.

It is not yet clear whether the effect is to be attributed to the proteins or to other components, but recently an authoritative source, the *American Journal of Obstetrics and Gynecology* (Jan. 2001) disclosed that soya, like many other vegetables, has a high content of so-called *phytosterols*; these are substances of a steroid nature and in particular those of soya have a structure very similar to the female hormones oestrogen and estradiol.

This means that soya can certainly be of help to a woman during the menopause, that is, in a period where she has a reduced production of oestrogen which, as has been shown, can increase the risk of osteoporosis. This is only a short step from

the possible positive effects of the *isoflavones* of soya on the typical troubles connected with the menopause and once again the answer comes to us from the Orient.

A survey on the diet of Japanese women (*American Journal of Epidemiology, no.15, Apr.01*) has shown that the consumption of soya-based products would tend to significantly reduce the so-called "hot flushes", typical of women in menopause.

1106 women aged between thirty-five and fifty-four, therefore in the pre-menopause period at least at the beginning of the study which lasted for about six years, were taken into consideration and only 101 of these complained of modest hot flushes.

The conclusion was therefore reached that the high content of *genistein* and *isoflavones* in soya beans is responsible for important modifications in the female estro-progestogen curve, thus promoting a later menopause.

