

*Erythroxylum coca*

[Synonyms : *Erythroxylon coca*, *Erythroxylum bolivianum*, *Erythroxylum chilpei*,  
*Erythroxylum coca* var. *coca*]

**COCA LEAF** is an evergreen shrub or tree. Native to Peru, Ecuador and Bolivia, it has small yellowish or ivory-coloured flowers.

It is also known as Bolivian coca, Coca, Cocaine, Cocaine-plant, Coca tree, *Cuca*, *Koka* (Czech), *Kokabuske* (Swedish), *Kokainovník obyčejný* (Slovak), *Kokainovník pravý* (Czech), *Kokastrauch* (German), and *Rudodřev koka* (Czech).

Cultivation of the shrub on a commercial basis for the extraction of cocaine for medicinal use is permitted within recognized worldwide constraints.

Warning – an exceedingly poisonous plant. It can cause drug dependency, hallucination, restlessness, tremors, convulsions, emaciation, loss of memory, sleeplessness, delusions and death. In Britain this is a Controlled Drug (under the Misuse of Drugs Act 1973) and it is illegal to grow the plant without authorization – as it is in other countries as well.

*Coca* is derived from *cuca*, a local Quechuan name for this South American tree.

The Inkas venerated the plant as a divine being, in the belief it had magical properties. This conviction was so great that small bags of leaves have been found in the graves of Inka nobility, placed there so that the dead could make their journey without hunger or thirst. Only the ruling class and priests were permitted to use the leaf on a daily basis, and it was included in offerings to the gods and provided an instrument for divining omens.

South American Indian tribes had already realized that chewing (or sucking) the leaf, mixed with a little lime or plant ash from specific members of the Goosefoot genus, *Chenopodium* (as betel nut *Areca catechu* has been used on the other side of the globe), offered many benefits. Not least among these were increased stamina, reduced fatigue, enhanced muscle potential, eased pain and allayed hunger pangs – because it affects the nervous system as a general stimulant. Another of its advantages of particular value in the Andean region was that coca helped to make breathing easier at high altitudes. It was also found to be able to ease gastric pain, vomiting and nausea. (No addiction was/is involved for the South American Indians when the plant is used in this way as the cocaine alkaloid in the leaf is countered by other ingredients.) Unfortunately the Spanish conquerors also appreciated advantages of a different nature to be gained from the leaf's widespread use there. While ensuring plentiful leaf supplies as a source of energy for the indigenous workforce ie. the South American Indians as well as the Inkas, the conquerors not only gave them little food and no remuneration but records show that they also worked them mercilessly and inflicted senseless cruelty and deprivation, particularly in the (what is now Bolivian) Potosi gold mines.

South American country-folk still turn to the coca bush today to help make their poverty-stricken existence and strenuous tasks more bearable, and to provide stamina for energetic dances during rituals and ceremonies. Distances there are still measured in 'cocadas' ie. the distance that can be trudged with a heavy load while chewing a coca wad. In the Andean highlands they slide a wad of raw leaf and lime mixture into the side of the mouth and replace it as the potency decreases, while in the lowland Amazon area (where there are few easily accessible sources of lime) they use a carefully dried and

powdered mixture that can also be held as a wad in the mouth but is completely assimilated into the body. Dried leaves, a gourd containing a small block of lime and a stick to remove the lime from the gourd are carried in the traditional vicuña pouch. (Perpetual use of the oral 'wad' has often caused deformity ie. a bulging cheek.) The leaves are only used to supplement a very poor diet (to maintain blood glucose levels) and, like their predecessors, still present day country-folk never have the problem of addiction. However even this solace is now made difficult for them as so many of the South American coca plantations have been destroyed to counter the illegal trafficking of the pure cocaine to the Western world – plantations more often than not farmed by many of those same poverty-stricken South American country-folk who are tempted by the profits on their harvest (over and above their own requirements) which for them outstrip any meagre return they would expect from conventional crops. In other words for the local population it is a 'catch-22' situation. Now attempts are being made in some South American country districts to wean local people off the centuries-old, traditional use of coca by introducing an alternative.

Many legends about coca leaf still persist amongst the different South American Indian tribes. One which is associated with the Tucano Indians of Colombia bears a common theme. It describes how a daughter of the Master of the Game Animals was pregnant and lay down in great pain. An elderly woman seemed to come to offer her immediate aid but instead broke off one of the suffering girl's fingers. The old woman buried this finger and it grew into the coca plant. Another tells how one Andean tribe, the Yunga, distressed Khunu (their god of snow, thunder and lightning) by blackening the snow-capped peaks of Illimani and Mururata with the smoke that enveloped them when they burnt the forests below. The Yunga (about which little seems to be known today) were banished from their homeland around the shores of Lake Titicaca and forced to wander in the mountains. Eventually exhausted and near to death from lack of water they came across the coca trees and to their amazement the coca leaves not only revived them but enabled them to cross the soaring mountain range without experiencing mountain sickness.

The contradictory nature of pure cocaine only began to emerge for Westerners when the cocaine alkaloid in the leaves was isolated in the 1840s. Unaware at first of the powerful drug unleashed (a similar innocence to that experienced with hemp *Cannabis sativa*), the news of the effect of cocaine as understood at that time spread like wildfire throughout North America and Europe – and rapidly it became fashionable to add leaf extract to tonic powders and drinks. World demand soared and coca plantations were established in the East Indies, particularly Java (now part of Indonesia). Apparently an Italian physician became extremely wealthy from a coca drink sold in two strengths – ostensibly as anaesthetics and painkillers, with the added alleged advantages of being able to cure various stomach and oral disorders. The milder version was known as *Vin Mariani* (wine with added coca), and the illustrious doctor was said to number the then Pope Leo XIII (1810-1903), who was appointed in 1878, among his clientele.

Not least of the drinks formulated was a tonic and headache cure made by a Dr. John S. Pemberton (1831-1888) a physician and chemist of Atlanta in the United States in the closing years of the 19<sup>th</sup> Century. He called it 'Pemberton's French Wine Coca'. Pemberton is believed to have been well versed in coca's qualities and used this knowledge when he included the cola nut as one of several exotic ingredients (including neroli from the bitter orange *Citrus aurantium* and cassia *Cinnamomum aromaticum*) in the ingredients..Then the rumblings increased in 1886 presaging the eventual enactment of the Dry Law or Prohibition of 1920-1933 and Dr. Pemberton decided that year to replace the wine with sugar and market 'Coca-cola' as both a desirable 'temperance drink' and a refreshing beverage. The recipe itself has always been closely guarded as a

trade secret, although it is known that adjustments have been made to it from time to time during the 20<sup>th</sup> Century. The coca leaves came to be used and in recent changes, although these are still said to be an ingredient as a flavouring, it is understood that the poisonous cocaine element contained in them has been removed prior to their inclusion with the other ingredients. One surprising discovery involving coca-cola was made in recent years. It seems that the drink has been used as a contraceptive douche in some then Third World countries, it was claimed, with some success. This could not be discounted when investigated by Harvard Medical School which had been able to show that 91% of sperm was stopped by the classic recipe for coca-cola. This percentage dropped to only 42% for the formula introduced around the turn of the 20<sup>th</sup> and 21<sup>st</sup> Centuries. Yet another unusual and at the time unsubstantiated claim from the Third World for Coca-cola was made in 2004. This time the liquid was held to be a potent insecticide.

The Indian and Sri Lankan coca shrubs are derived from plants sent out from The Royal Botanical Gardens at Kew, in England, plants that were themselves grown from seed.

It was not until 1884 that cocaine's ability to deaden nerve endings came to light from work carried out by a Viennese chemist. This discovery was to revolutionize surgery as the use of cocaine in local anaesthetics came gradually to be adopted. The addictive properties of the isolated cocaine were beginning to be apparent however and this led to a search for non-addictive synthetic substances that were eventually identified by the turn of that Century. Research into the constituents of cocaine has led to the emergence of several synthetic substances that are now used in local anaesthesia in addition to the natural drug. The drug known as 'crack' is a derivative of cocaine.

Medicinally, coca leaves were once used to ease nausea, stomach pains and vomiting, as well as being taken as a tonic. Today cocaine's main use is in eye, nose and throat surgery.