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Articoli/*Articles*

THE CONTRIBUTION OF THE PRE-COLUMBIAN TO THE EUROPEAN MEDICAL MATTER

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SUMMARY

The discovery of America stil goes on through the analysis of its medical matter. From the exploitation of the resources made by Columbus, to the comprehension of local civilizations and to the reception of their therapeutic means, is a path that winds, supported by different reasons: the economic return, the therapeutic efficacy, the cultural exchanges between peoples. Unfortunately, with the passing of time, many traditions, fruit of the experience of mysterious centuries, are lost. It is through the examination of American medical matter that we try - with the advantage of acquiring new curative means - to find a new key for the comprehension of its peoples.

Through deceit doctors with their vestments,togas and slippers made people believe them to possess the real art of recovering, using instruments that strike imagination.

B. Pascal[1]

Which are the instruments Pascal was referring to? Were they present only in Europe or did they represent the European expression of an approach to illness, common to the rest of the world?

Parole chiave/Key words: Pre-columbian medicine - influx - Europe

In seeking the pharmacological defences of the Pre-Columbian epoch it appears evident the rarity of the testimonies of those times. Many attributed this phenomenon to the *quality* of the discovery of America : since the beginning, as many historians said, the reason which induced Columbus to explore the New Indies was the will to Christianize the pagan people[2] and to set free the Holy Land. In order to make the Royal family of Spain finance the journey, he pointed out the discovery of immense treasures, neither for his maecenas nor for himself. The gold should be used to prepare a crusade, guided by Philip II of Spain, for the liberation of Jerusalem. Probably for this reason, Christopher Columbus entered annotates in the log-book each possible indication useful to the discovery of gold or other jewels. Meanwhile he tends to cancel every trace of the pre-existing native culture, trying to supplant the local traditions and to impose the Catholic religion.

There is no interest for any autochthonous cultural form. He shows the possibility of extracting - from the conquest of the Indies- spices, cotton, mastic, aloe wood, rhubarb, cinnamom and slaves. After the first meetings, in which the natives welcome the foreigners as Messianic messengers, people become first cautious then hostile towards the invaders: there is a great wonder and distrust for the novelty of usages and customs practised by the men who come from the sea; everyone in his way tries to acquire advantageously what he does not possess: what comes into being is, for the conquerors, a profiteable commercial exchange: hand mirrors and necklaces in exchange for pearls, gems and so on.

Also for the halo of mystery and magic that surrounds the world of medicine, everyone - Spanish and native - has the tendency to keep for himself his own secrets, without a useful cultural exchange. Moreover, in the sanitary field there is a scarce sensibility: the natives consider illness as a divine punishment while from the Spanish point of view the empiricist frame is just sketched: so the patiens tend to hide as culprits. For this reason, avoiding larger cultural exchanges (that are impossible

at last at a first impact) the field of comparison is limited to the treatment of wounds caused by fightings.

Also in America, as in other extra-European cultures, the therapeutic patrimony is handed down orally by men with social prestige: wizards (*tictl* who use magic rites) and medicine-men (*tapati* who use traditional therapies and empiric observations). They assume also a religious role, just for the theurgic vision of disease. A sanitary trinity is put as a regulator of health: among Maya there is the father of medicine and of man (*itzamna*), the god who induces to discover the medicinal properties of plants (*citbolontun*) and the god of knowledge (*ixchel*)[3]. Wizards act as mediators and depositaries of science which requests, sometimes, also religious rites to be effective. The missionary fury of Columbus (who nicknamed himself Colon) in catechizing and converting, tends to make these therapeutic figures be subjected and so to make them disappear, contributing to breaking the stitches of that thread which was the oral tradition and sending last a great part of the native medicine.

That this was rich is testified by the work of Pineda de Polanco, who describes the flora of Guatemala in 55 volumes, in particular dedicated to hygiene, diet and treatment for delivery[4]. The knowledge of the pharmaceutic-botanic patrimony of the Indians of America, follows in this way the global depauperation of the natives; a superficial idea could be given only thinking of the botanic classifications of one thousand and two hundred plants, made by Hernandez de Avideo, more than eighty years after the discovery of the New World. But in his log-book Columbus had already regretted his ignorance:

> moreover I believe that there are many herbs and plants growing here which could have a great value in Spain for tintures and medical species, with various fruits and all so sweet-smelling that is a pleasure; (October 19, 1492)[5] I am the saddest man in the world because I don't know them, but I'm sure they have a certain value (October 21, 1492)[6].

It is well-known that Americans knew the exciting properties of coffee, tea and coca besides the action of pepper against blenorrhage and that oniric of the scopolamine (it was given to the suffering as flowers of *Datura stramonium,* which have an anti-vagal action)[7]. Coca was also used as money of exchange in markets for its properties of rendering tireless the ones who the local tradition supplanting it with the European culture, cancelling all the autochthonous popular heritages, considered primitive and not so reliable: as a confirmation of the mentality with *Cuneo* (who accompanied Columbus in the second journey to Catholicism and so the salvation of soul against the privation of gold, pearls, spices and precious stones, brasil wood and slavery[9]. For the avidity shown in acquiring the precious yellow metal, as to reawaken the fatidical Dantesque law of retaliation, De Bry reports that the natives killed some Spanish men by pouring fused gold in their mouth and cutting their limbs[10]. The only real testimony of traditional medicine is given in the diary of the fourth iourney (1503), where Pietro da Ladesma the wounded is treated by natives with oil, instead of the turpentine used in that period[11]. Among the other testimonies that of Antonio Pigafetta loses credibility because of his improbable descriptions of birds without bottoms or birds which feed on their similars; other times he reports possible events mentioning the ingestion of a kind of thistle to vomit, or the practise, as a therapy for headache, of executing a transversal cut on the forehead or on a limb to make plentiful blood come out (the American bleeding)[12]. Michele da Cuneo reports the practice of treatment of the wounds with knives of sharp stone, of oiling skin with fruits colouring red and black against midges[9]: Girolamo Benzoni describes the use of herbs to abort or tobacco smoked until one loses ones' senses or cacao drink as an infusion[13].

Some years later (1570), the king of Spain himself, realizing how much this botanic aspect had been unfairly neglected (also by the medicine men and surgeons embarked on the caravels) sent Francesco Hernandez de Avideo (1514-1587) with the

specific task of gathering information about the medications used in the New Indies.

At the basis of this behaviour we can find also the necessity of defeating the epidemics of syphilis had been breaking out sence from the year 1493. Beyond the discussion if the lues was already present before the discovery of America in the Old Continent (as is said by the School of Guatemala[14] and by the German Sudhoff)[15] or was imported by the first sailors who came back from the Columbian journey (as is described by Rodrigo Diaz in 1504 about one of the Pinzon brothers, and more recently by Bloch)[16], the *mal franzese*, that is the syphilis in the sixteenth century spread through out Europe in an epidemic form. The conviction of the epoch that where a disease is originated there is the remedy to defeat it, created the premises for the American solution to the lues. For this reason, in 1521, Gonzalo de Oviedo in his *Historia* describes the decoction made with *holy wood* (the *guaiacum*):

> in two jugs of water they put half a libre of the wood and they make it cook till two partes misses, then they take it away from fire and they leave it pose. And the sick then drink a plate before breakfast in the morning for twenty or thirty days... during that time he has to respect a certain diet and he mustn't to eat meat nor fish, but raisins and only dry things in small quantities that is sufficient only to sustain himself another water cooked in the some guaiacum[17].

In 1529, a book by Francesco Delicado, a spanish priest, is published in Venice; this book decribes the clinical finding of the syphilis and the therapeutic use of the decoction of *guaiacum's* wood[18]. The efficacy of the therapy was not complete; then Fracastoro in 1530 suggested associating a mercurial treatment to that with holy wood, in order to eliminate the bad humurs (with the increasing of the salivation). Also the *sarsaparilla*, used in Europe as a diuretic substance, in South-

America is used as a therapy for the *mal de las bubas* that is lues[19, 20]. The inefficacy of the therapy enhaced a more dissimilar hypothesis: from the traditional divine punishment for corruption, to the bad influence of the stars as Mars-Saturn's conjuction, to the infection from worms with the by Gerolamo Fracastoro[21] (the first example of the microorganismic theory of the infections). It's important to remember to be respectful of our ancestors and their ideas, apparently without sense: in fact, even if the motivation is different, for epidemiology it is important to know that a pathology is worse with new people: in 1500 there is the epidemic appearance of the lues, smallpox, chicken-pox, typhus and influenza. Likewise the decimation of the natives, is connected with the contact with invaders: is that the reason for the surrender of the American people? There is not resistance because there is fear of disease, so the natives preferred to hang themselves[22].

In 1577, when he comes back to Spain, Francesco Hernandez de Aviedo, protophysician of the Indies, brings four handwritten volumes (burned in the fire of Escorial of Madrid in 1671), that decribe one thousand and two hundred medicinal plants, besides minerals and animals.

Moreover, it is to be reminded that, in the XVI century, precious stones, metals and talismans were parts of the therapeutic instruments of the philosopher-physician[23]; this man is considered an astrologer who expressed the diagnosis also with the aid of the macroscopic urine-analysis (uroscopie); medicine had the task of evincing the therapeutic force of nature (*vis sanatrix naturae*). Nevertheless this aspect is not discussed here because it is not pertaining to the subject. I remember only that

> the greater part of the caciqui has three stones towards first one is useful to the forages, and to sown legumes, the other one to the delivery of the women without pain and the last one is useful to the water and the sun in case of need[24].

For the complexity of the de Aviedo's books, king Philip II of Spain orders to his personal physician Leonardo Antonio Recchi da Montecorvino to make an abstract for practical use: in 1589 the Recchi has selected four hundred plants but his work will be published only in 1648 by the Lincei Academy in Rome under the title *Mexican treasure*[25]. The criterion through which these plants were selected is not clear and even less how, without scientific verification, about fifteen vegetal products are still considered efficacious. They appear as a gift to the galenic medicine of the time: there are five antidotes *contrayerva, sweet-china, sassafras, guaiacum, sarsaparilla*, five balsams of the *copaive, peruvian* and then of the *Tolù, liquidambar, china-china*, a laxative *gialappa*, an astringent *logwood*, a digestive *cascarilla, cacao* and *tobacco*. Leaving a side the china about which we will talk estensively further, we give some notes about the use of the other substances; the *contrayerva*, as its name says, is a bitter tonic which is used as an antidote for the bites of the snakes; the *sassafras* had an action of light diuretic and stimulator; the *guaiacum* is used in luetic therapy; the *sarsaparilla* has initially a diuretic effect, then it is useful for syphilis and local tubercolar therapy; recently (1930) Rittman and Schneider attributed to this substance the capacity of reducing azotemia[26]; the *copaivés balsam* is used for the topic therapy of gonorrhea and, especially with *cubebe*, for cystitis; the *peruvian balsam* has an insecticidal action and was recommended against scabies, alopecia and baldness; to this was often associated *Tolù's balsam* which has a more light action but was more a weet-smelling; the *liquidambar* or storace was given as expectorant with balsamic smelling; then with the peruvian balsam it was used in the scabies' therapy; the *gialappa* used as a laxative, then found its efficacy as a diuretic for ascites, pulmonar edema and as an antielmintic vermifuge; *logwood* is a light astringent and has been used as a treatment for dirty sores; *cascarilla* for it's content of tannic acid is useful as stimulator of the appetite[27].

Howewer there are other different sources from which we can have information about the medical matter of the natives:

among them we find the work of Alvar Nunez Cabeza de Vaca (*Naufragios* 1542), similar to the more important by Gonzalo Fernandez de Oviedo (*Historia general y natural de las Indias*, 1535); the work of F. Lopez de Gomara (*Historia de Indias*, 1552); the one of Josè de Agosta (*Historia natural y moral de las Indias*, 1590); the one of Antonio de Herrera (*Decades* or *Historia General*, 1601-1605); the one of Bernard Diaz del Castillo (*Historia verdadera de la conquista de la Nueva España*, 1632); the one of friar Bernardino di Sahagun (1500-1590) (*Historia general de las cosas de Nueva España*, published in Mexico, 1829); the one of Bartolomè de las Casas (*Historia general de las Indias*, published three centuries after); the one of Bernabè Cobo (1582-1657) (*Historia general de las cosas de Nueva España*, printed in Sevilla, 1893).

Besides the arid list of the first sources about the natives, among the most important works is to be remembered the *Historia* and the summary by Gonzalo Fernandez de Oviedo: here, the author pays special attention to the native culture and talks about the use of dead peoplés grease as undeterminated medicine, the use of gold in dental caries, the surgical operations of circumcision, of mastectomies for the amazones and of castrations; also the essay of Lopez de Gomara is to be remembered because it reports the use of odontojatric treatments through fish and describes the practice of embalming; at last de Acosta is the only one who reports the clinical finding of the the Rocky Mountains fever.

The *Badianus* or *Barberinus Codex* deserves a particular role: it was found in the Royal Library of Windsor in 1552, and it is made up of 12 chapters in which 180 plants are described; it was traslated from Atzec to Latin (*Libellus de medicinalibus indiorum herbis)* by the Indian friar Joannes Badianus, and from Latin to English by Emmart in 1940.

Discovered by Gomez Ortega in a monastery of Madrid the work of Hernandez de Aviedo, it was published finally in three volumes in 1790 as *Francisci Hernandi historia plantarum Novae Hispaniae.*

Actually, the medical culture of the time itself, still bound by interferences of religious philosophic, was not able to appreciate or to estimate the real efficacy of the new substances, undervaluing the use of the same drugs which later would have been revalued; for example, the *ipecachuanha* at the beginning had only an antiemetic role and then an antidiarrhoic and antiamoebic function (as it was considered by the natives of Brasil)[28]; its amoebicidal action was shown by Schaudinn and Viereck in 1912[29]. We must not forget how the microorganismic theory of infections has not been accepted yet and how much empirism pervaded the medical art; really also the surgeon, who is of barber's descent, was poorly appreciated (a little monthly pay on Columbus' caravels, similar to the one of a sailor, is the witness of that) and he was only able to practise a therapeutic bleeding; the therapeutic procedures were generally mixed with religious rites. Only later did a process of reviewing what was objectively valid in pre-columbian culture begin. The new cohesion of the cultural with the social anthropology permitted also the recovery of a part of the traditional patrimony of the natives. Till recent times, the difficulty in the transport of these substances reduced their import, because it was hypothized that the profits of the sale could be too scarce. When the sailors returned back to their native lands, they brought some plants, in small quantities, for personal use, which had been useful in the Indias without scientific control. Instead the medical indian matter was rich and included emetic (*euphorbia*), catartic (*cascara, aloe, decoction with tannic acid and ipecacuanh*a), sedative of the cough (decoction with linen, basil), diuretic (*sarsaparilla, juniper, sommacco*) substances; the natives used the resin of lentisk for the epigastric pain[30], as laxatives they used *cagioba*'s inhalations[31]. Against renal stones, Oviedo made a detailed report to Charles V: he had to drink the juice of recently gathered coconut;

> drinking is the best thing which is possible. Those people that drink this juice and have flank's pain, say it is a wonderful and

> true theraphy against this pathology, and then the stone is broken and eliminated with the urine; this tree is similar to the palm-tree and, as Plinius says, many people write that all palms are useful in flank's pain, and from here deserved the idea that the coconut as palm-fruit, is useful in the same pathology[32].

Oviedo, for the same disease, refers also on other remedy, grinding the bone of the fish named *manati*:

> this manati has a kind of stone or a real bone in the head into the brain, which is very appropriate for renal stones and flank's pain; here many people who have this disease have relief and benefit from that. For this use, they grind the previous dried stone; then in the morning, before breakfast, the patient takes as much of this grinded and sieved powder as can be put on a coin with Julius Popés effigy; and he takes and drinks it with a good white wine at one gulp. They say that, continuing throughout morning, the pain goes out and the stone is broken and eliminated as sand with the urine. That's what I have heard from respectable people who have experimentated that[33].

Other botanic american substances have had a reasonable success in Europe. The exposure to the atmospheric changes of the temperature produced, in the natives, frequent pain in the joints; as well as treating these pains with hot baths, they also used local applications of resin, gialappa, bark of walnut, bark of willow (which contains salycilate). The *hobo* is a tree whose fruits are used by the natives for many aims: against tiredness and as shaving lotions[34]. The *peyotl* - a bean containing a narcotic substance that is mescaline - is used many times in the religious cult; the mescaline produces indifference to the environment and aboulia[35]. Its use is permitted and in schizophrenic patients visual and auditive hallucinations are possible, but generally it produces mystic deliriums[36]. The *curare*, imported by Raleigh from Guiana in 1595, was studied for muscolar relaxation by Claude Bernard. Only the *china* and

the *sabadiglia*, in the Jesuitic and Capuchin friars respectively, excited an interest in their possible trade; a real monopoly of the export with large profits was organized.

The *china* or *cinchona*, after the overcoming of the objections of the Galenic school followers (because it produced the recovery without the expulsion of any humor), was largely used for malaric fevers; this substance acquired his notoriety as the powder of the countess because the physician Giovanni de Vega cured with it the wife of the count of Cinchon (from which the name *cinchona*), Spanish governator of Peru, in 1639, from the tertian fever. Afterwards the *cincoina* was extracted from the same bark and the *quinidine*, whose cardiologic antiarhytmic effects are common knowledge. Still in 1883, Ruata[37] reports a list of the *chinas* divided into yellow, grey and red with methods to identify the adulteration (sign of a market with large profits): he expresses a supposition of a protoplasmatic poison (*the chinina with the human blood in proportion 1/400 stops quickly the amoeboid movement of the white corpuscoles, and then should act as a powerful protoplasmatic poison*; Binz)[38], or a cardiac tossic one (depressing the myocardic tissue in high doses on animals: Chaperon) or a neurologic one (suppression of the reflexes: Eulemburg), and as malaric antipyretic one (Crudeli: the *china* kills the malarian bacillus); some less important uses of the *china* are as tonic against the bronchial asthma, a shrill voice and whooping-cough[39].

The revolution produced by china was enormous, not only for the capacity of recovery from tertian fever but also for its action without elimination of toxic secretions, as the galenic humoral theory required.

In XVII century, the *ipecacuanha* was also introduced, as an antidiarrhoic substance, in medical European matter from America: also in this case an excellent patient - the dauphin of France - contributed with his recovery, to the propagation of this root; in 1686 the physician Helvetius used this root exactly as it was used in loco for the treatment of amoebiasis[40]; since the beginning of the XX century it was used as an emetic (in-

duced vomiting) and expectorant substance (its irritant action on the digestives and respiratories mucous membranes helps the production of more fluid and so more easily eliminable secretions: Murrel, The practitioner, september 1879).

The *sabadiglia*, from XVII to XVIII century, already used for the treatment of dirty sores by Atzec people, was imported in Europe and, associated to *tobacco* and to *stafisagria*, gave origin to the *powder of the Capuchins*, famous antiparasitic powder. Also the decoction with *perebecenuc*, applied on a sore, had miracolous recovery[41].

Therefore the monkes, more enlightened than Columbus, revalue traditional medicine and they try to explain it, separating the magic from its objective effects. This work is very complex for two reasons: on the one hand the vigorous intersection, in the culture of the natives, of the tangible (*tonal*) with the supersensible world (*nagual*), linked together in an harmonious combination[42], makes sometimes inseparable the psycosomatic effect from the real action of the plant; on the other hand an incomplete knowledge of the pharmacological properties of substances present on the american territory stimulates one to search for further deepth about the medical notions of the natives.

The efficacy of the local medicinal botany appears binding for the evolution of European pharmacopeia; its importance is constantly subjected to review while side by side is observed a progressive increase in the analysis and in the importation of these substances: *coca, cotus, curaro, guaco, guarana* (like caffein), *maticus* (hemostatic and vasocostrictor substance), *monesia* (for topical healing), *piscidia and ratania* (astringent) in the years 1800-1860; *boldus* (stimulating the nervous and circulation system), *cedrone, condurago, jaborandi, muira puama, papaina, passiflora, peyotl* (mescaline), *quebracho* and *quillaia* in 1860-1960.

Still a long way has to be covered to understand the different mechanisms of pharmaceutical botany and to know the real therapeutic properties of substances, of all the continents; proba

bly, man will arrive yet again at the conquest of his homeostasis through the knowledge of his own *roots*.

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