

## A CONTRIBUTION TO THE STUDY OF HELMINTH FINDINGS IN ARCHAEOLOGICAL MATERIAL IN BRAZIL<sup>1</sup>

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(With 8 text-figures)

The study of ancient faeces or coprolites is particularly interesting as it is performed presently aiming the knowledge of ancient people habits and their parasitic diseases.

The coprolite analysis is not so recent and in the past century, Harshberger (1896) pointed that seeds that were found in human coprolites could give some informations about food habits of prehistoric populations.

We must distinguish two kinds of coprolites: the mineralized, of long geological age and those preserved in organic state (Heizer & Napton, 1969).

Since the development of Callen & Cameron's (1960) rehydration technique, the microscopic analysis of coprolites has allowed the finding, in increased numbers, of parasitic forms.

Thus, paleoparasitology emerged as a branch of paleopathology in the moment that parasitic forms were sought in archaeological material.

We can refer some reviews and annotated bibliographies about the subject. Hantzschel *et al.* (1968) reviewed a long list of papers, mainly mineralized coprolites of animal origin; Pike (1967), Gooch (1972), Wilke & Hall (1975), Fry (1977) and Araújo (1980) made also reviews about the study of parasites in archaeological

remains, but the list of publications are only about coprolites preserved in organic state and the basic subject are the human coprolites.

The presence of parasitic diseases among ancient populations was also inferred by examining mummified tissues (eg. ex Ruffer, 1910 and Cockburn *et al.*, 1977) or the intestinal contents of mummies of the old and New World (Szidat, 1944; Pizzi & Schenone, 1954; Helbaek, 1968; Ou Wei, 1973 and Allison *et al.*, 1974).

This line of research is only in its first steps in our country (Ferreira *et al.*, 1979; Araújo, 1980) and in this paper we report the opportunity we had to examine coprolites collected in caves of the State of Minas Gerais. The samples are of human and animal origin and the parasitic eggs found stimulated some considerations about their introduction as well as of their hosts, in South America, before the coming of Europeans and Africans.

### MATERIAL AND METHODOS

The coprolites analysed were collected in caves of Minas Gerais by archaeologists and sent to us with the identification, strata and datation already done.

The description of the archaeological sites and samples are as follows:

*Gruta do Gentio II* (site MG RP6) – At Unaí, on the northwest of the State of Minas Gerais, Central Brazil. The climate of the region

<sup>1</sup> Received August 26, 1980.

is dry, with the rainy season from October to April. The vegetation is predominantly that of a savannah type.

The cave is located in a calcareous bank 2.5 km long; the entrance is about 6 m above the soil level and its main chamber measures 10 m x 14 m and about 3 m high, close to the entrance. On the roof and walls paintings of animals, anthropomorphic figures and symbols in red, black and yellow can be observed.

The archaeological studies performed up to the present time detected two moments of the cave occupation: the oldest one is represented by hunter-gatherers that left stone, bone and wooden artifacts. That layer is dated by the  $^{14}\text{C}$  method of  $8,125 \pm 120$  BP (Smithsonian Radiation Laboratory-SI-2373).

The findings of the more recent horizons suggests an occupation by ceramists-agriculturists that left artifacts such as wooden art objects, feathers, snail shells and food remains (peanuts and maize). The site was used also as a burial place and thus the datations obtained for this period were disturbed by the soil remanagement. The radiocarbon analysed from this strata revealed an occupation period ranging from  $3,490 \pm 120$  BP to  $430 \pm 70$  BP (SI - 3521).

The coprolites were collected from this last period and sent to us by the professors Ondemar Dias and Eliana Carvalho from the Instituto de Arqueologia Brasileira, Rio de Janeiro.

We received 38 samples with 50 units that, during excavations, were identified as coprolites. Of these 50 units, 36 proved to be coprolites. The others had only mineral contents, although their shape and size were similar to the coprolites.

The coprolites had not odour and some of them were cylindrical (Fig. 1) and others, with variable sizes (3 to 10 cm) were amorphous, mixed with earth.

*Grande abrigo de Santana do Riacho* - At Santana do Riacho, Central region of the State of Minas Gerais. It is located in a calcareous bank and was used by indian groups as a site for habitation and burial place. There have been identified two levels of occupation where several bonfires and painted stones were distributed.

The layer I is dated from  $3,990 \pm 70$  BP to  $4,340 \pm 70$  BP by the radiocarbon. The layer III is composed by 3 levels of burials and one of them is dated of  $9,640 \pm 110$  BP. The

occupation of the site can be divided in 3 periods: a) Recent period: from the present to 5,000 BP; b) Ancient period: composed by 3 levels of burials and lithical industry, dated from 5,000 to 10,000 BP; c) A more ancient period where only fire remains were found (Junqueira *et al.*, 1979).

The coprolites of Santana do Riacho were collected from the ancient period level in close association with the burials. The coprolites were well preserved and is noticeable the remanagement of the earth in little tunnels (galleries) that lead to "nests" where the coprolites were grouped in great numbers.

We received 10 samples from Dr. André Prous, from the Museu de História Natural da Universidade Federal de Minas Gerais, 4 of which were not coprolites; the other 6 were composed of 50 to 200 units of cylindrical form, dark with brilliant spots on a smooth surface, 1 to 3 cm long and with thin extremities (Fig. 2). We received also from Dr. Prous suspected material from Lapa Vermelha IV, Lagoa Santa and Lapa Pequena, Montes Claros, both in the State of Minas Gerais, but the material after analysis proved not to be coprolites or, if so, could not be identified.

In the laboratory each sample received a number and if composed by more than one unit, the letters A, B, etc were added to the number. After that, from each coprolite was separated one fragment of about 3 cm and, in the case of little coprolites, the whole sample was used. The remaining was replaced in the original jar. Each fragment was placed in a transparent glass jar with a lid to close it hermetically and, following Callen & Cameron's (1960) technique, poured the 0,5% aqueous solution of trisodium phosphate ( $\text{Na}_3\text{PO}_4 \cdot 12 \text{H}_2\text{O}$ ), sufficiently to cover the material. The minimum time for rehydration is 72 hours but if longer, it is possible to grow fungal and bacterial contaminants. To prevent this it is advisable to add formol-acetic solution. After 72 hours part of the material was separated and the remaining preserved.

The bigger fragments were then separated under an entomological microscope and the parasitological examination was performed by the spontaneous sedimentation method developed by Lutz (1919). Slides were made at regular intervals and the last one 24 hours after the beginning of sedimentation. The remaining sediment was



Fig. 1 - Hun

aspirated and preserved. The slides are still in analysis by using the following procedure: 1) Cover the sediment drop on the cover slip. 2) Cover it with sealing-wax prepared with and tar (9 parts), carefully the cover slip with an iron (1942). The slides must be in position and protected from

## RES

The coprolites were examined for their form, size, colour and phosphate content as postulated by Callen (1967). Thus, we obtained the following results from *Gruta do Gentio I*.

Of 36 coprolites, 10 were found to contain parasites:

- Small larvae of *Ascaris* with blunt anterior extremity. Internal structures were visible. It was possible to see the contents of the intestinal tube as is, probably, its continuation.
- Larvae of *Intestine* and structures like the *Intestine* approximately twice that

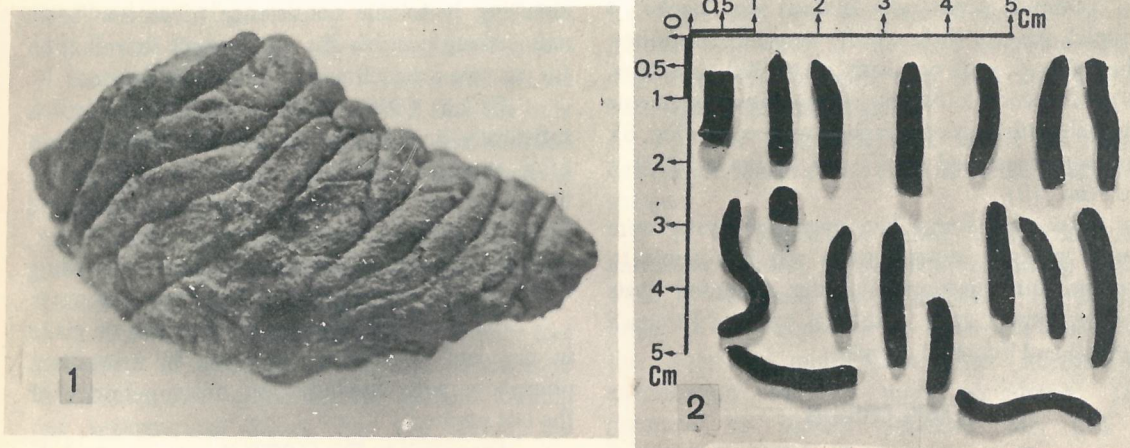


Fig. 1 – Human coprolite from Unaí Cave. Fig. 2 – Coprolites from Santana do Riacho.

aspirated and preserved in formol-acetic solution. The slides are still preserved for microscopic analysis by using the following technique: 1) Add to the sediment drop some fragments of triturated cover slip. 2) Cover it with a cover slip. 3) Using sealing-wax prepared with bee wax (one part) and tar (9 parts), carefully close all the edge of the cover slip with an iron-lute handle (Langeron, 1942). The slides must be placed in horizontal position and protected from light and dust.

**RESULTS**

The coprolites were separated from lumps that looked like excrements on the basis of its form, size, colour and odour of the trissodium phosphate solution after rehydration, as was postulated by Callen & Cameron (1960). The coprolite contents were also observed, like food remains and parasite evolutive forms (Callen, 1967). Thus, we obtained:

*Gruta do Gentio II*: 36 coprolites; 14 lumps.

Of 36 coprolites, 10 showed evolutive forms of parasites:

a) Small larvae of yellow brown colour, blunt anterior extremity and thin end. The internal structures were not well visible, but it was possible to see the oral orifice, the beginning of the intestinal tube and an helix structure that is, probably, its continuation (Fig. 3).

b) Larvae of intermediate size with form and structures like the first described. Its size is approximately twice that of the anterior (Fig. 4).

c) Sheathed larvae: in this one, which is apparently better preserved, when examined with more attention it is impossible to distinguish the internal structures. They are all rolled up and covered by a sheath that in some places is wrinkled. The anterior extremity is round and the tail very thin (Fig. 5).

d) Eggs of ellipsoid shape and thin membrane. Inside some of them there is a larva similar to those described firstly (a) (Fig. 6). Inside others there is something like an embryonary mass. Eight eggs were found in only one coprolite and they measured  $73,20 \pm 9,16 \mu\text{m} \times 40,20 \pm 5,09 \mu\text{m}$ . They were identified as Ancylostomid eggs for the reasons we will discuss later.

e) Brown dark eggs, with double membrane and translucent polar plugs. These eggs, found in two coprolites, measured  $55,33 \pm 2,22 \mu\text{m} \times 28,85 \pm 0,09 \mu\text{m}$  and were identified as Trichurid eggs (Fig. 7).

All the 36 coprolites turned the trissodium phosphate solution to dark brown colour, nearly black, opaque. They showed vegetable remains, pollen, bone fragments, coat and brilliant black fragments which were identified as charcoal. Nothing of this occurred with the lumps and although the solution turned brown it remained translucent and smelled like wet earth.

One of the samples, number 24, was of bright colour and, when rehydrated, the colour of the solution was also bright, although opaque. The contents were identical to the other samples including the Trichurid eggs that were also pale.

*Grande abrigo de Santana do Riacho*: 4 samples, each with one unit, were not coprolites. The other 6, each one with 50 to 200 coprolites, showed under microscopy, several insect fragments and helminth eggs of a dark-brown colour (Fig. 8). The eggs measured  $80,57 \pm 4,14 \mu\text{m} \times 39,21 \pm 3,67 \mu\text{m}$  (10).

Rounded forms like protozoal cysts, were noted in some slides, but it was impossible to confirm this diagnosis for the supposed cysts did not appear again, although we used Ritchie's method and iron-hematoxylin.

### DISCUSSION

The rehydration technique by trissodium phosphate proposed by Callen & Cameron (1960) permits the reconstitution of dried fecal material,

changing it to the consistence of recent faeces and making possible the microscopic examination for parasite research using well-known methods.

Callen (1967) stated that no test is sufficiently accurate to establish the human origin of a coprolite. However, when the rehydration technique by trissodium phosphate is used and turns the solution to opaque dark-brown or black, with an offensive odour after 72 hours, according to the author, this suggests human coprolites.

Heizer (1970) compared the analysis made in dry and rehydrated coprolites by trissodium phosphate and concluded to the superiority of the last method.

According to Fry (1977) there is no absolute test to determinate the human origin of coprolites, only when they came from mummified bodies or exclusively human parasites were found. He

examined one of paran (1967) and studied the of zoological garden rehydration solution. From animal with faeces the opaque and dark-brown the coati (*Nasua nasua*).

The 36 coprolites were considered of human reasons:

a) Shape and size: the aspect of moulded, amorphous with earth like agglomerated faeces shape is not a safe parameter similar in shape to the coprolites.

b) The colour: solution: All the 36 coprolites into the colour attributed to one. The contents, however, others (vegetable, pollen) as it also contained parasites below. This appearance of colouring, could be due to decrease of biliary secretion.

c) Smell: All 36 coprolites in the solution had a faint smell of wet earth. In the coprolites, if not added to a fungal and bacterial product.

d) Contents: Beyond pollen that are preserved in the coprolites, several parasites.

In 9 of 10 positive coprolites, 3 different sizes whose contents were sheathed larvae, made up of the evolutive stages of a nematode, eggs with compatible morphology of Ancylostomids and the contents of larvae identical to the first stage, reinforced the diagnosis.

The measurements were compatible with those of Ancylostomids eggs, although the definitive diagnosis for the majority do not assure the species involved.

In two coprolites, Ancylostomid eggs and *Trichiura* eggs. The diagnosis

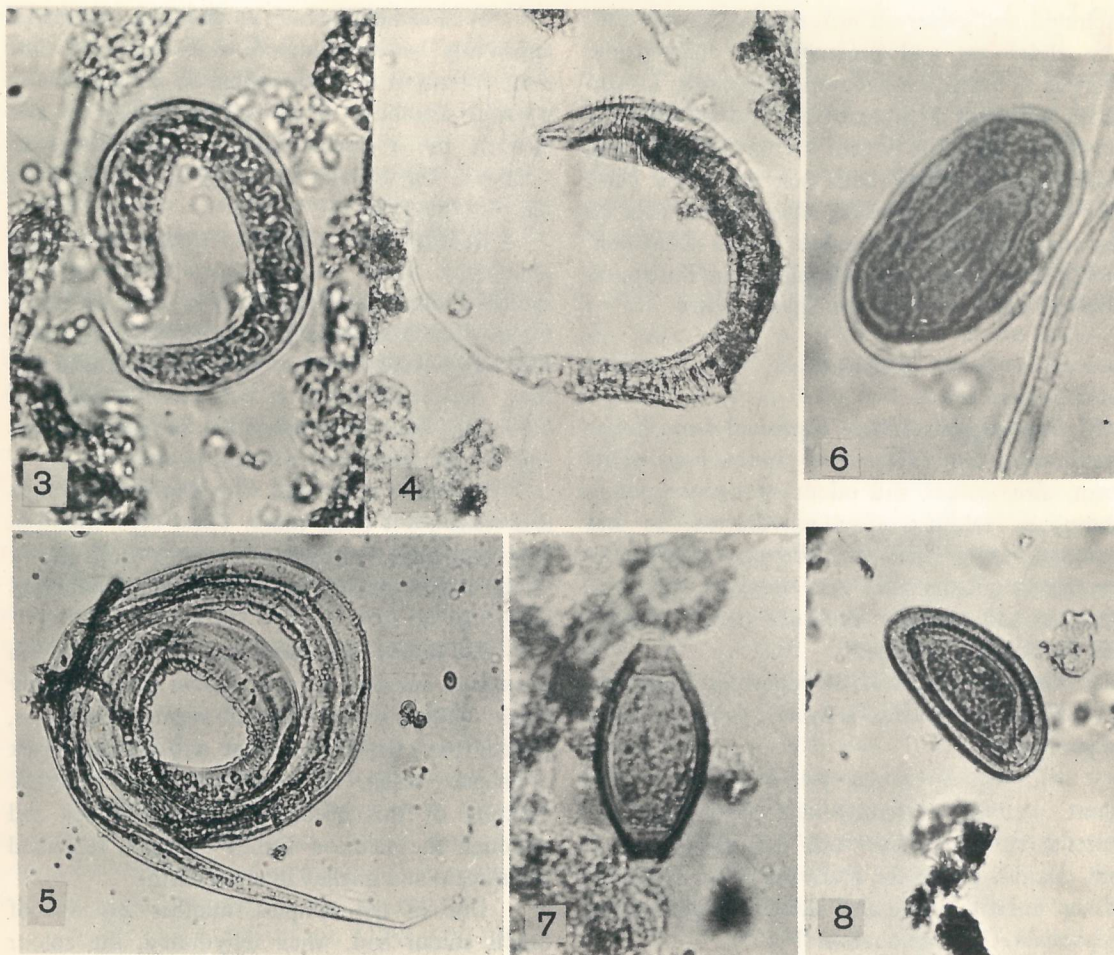


Fig. 3 - Larva of nematode, possibly Ancylostomidae (x450). Fig. 4 - Larva of nematode, possibly Ancylostomidae (x150). Fig. 5 - Larva of nematode (sheathed larva) possibly Ancylostomidae (x100). Fig. 6 - Ovum of Ancylostomidae (x150). Fig. 7 - Ovum of *Trichuris trichiura* (x150). Fig. 8 - Ovum of *Parapharyngodon* sp. (x150).

examined one of parameters established by Callen (1967) and studied the effects of recent faeces of zoological garden animals and man on the rehydration solution. He concluded that the only animal with faeces that can turn the solution opaque and dark-brown like the human faeces is the coati (*Nasua nasua*).

The 36 coprolites from *Gruta do Gentio II* were considered of human origin for the following reasons:

a) Shape and size: Only two coprolites had the aspect of moulded faeces. The others were amorphous with earth on the surface, looking like agglomerated faeces. For this reason, the shape is not a safe parameter for the slugs were similar in shape to the coprolites.

b) The colour of trissodium phosphate solution: All the 36 coprolites turned the solution into the colour attributed to human faeces except one. The contents, however, were similar to the others (vegetable, pollen, bone fragments, charcoal) as it also contained parasite eggs as is discussed below. This appearance; that is, the lack of colouring, could be explained by a possible decrease of biliar secretion due to some pathology.

c) Smell: All 36 coprolites, after 72 hours in the solution had a foetid odour, as opposed to the 14 slugs that presented the characteristic smell of wet earth. In addition, the solution with coprolites, if not added acetic formalin, presented fungal and bacterial proliferation.

d) Contents: Beyond the food remains and pollen that are preserved for examination, 27,7% of the coprolites showed evolutive forms of parasites.

In 9 of 10 positive we found larval forms of 3 different sizes whose characteristics, mainly the sheathed larvae, made us consider them as evolutive stages of a nematode. The finding of eggs with compatible morphology to that of the Ancylostomids and the presence, inside them of larvae identical to that interpreted as the first stage, reinforced this hypothesis.

The measurements of the eggs are compatible with those of the *Necator americanus* eggs, although the deformation suffered by the majority do not assure a positive identification of the species involved.

In two coprolites, including one with Ancylostomid eggs and larvae, we found *Trichuris trichiura* eggs. The diagnosis was made based on

its shape and size and the occurrence of the human whipworm in the same coprolite where suspected Ancylostomid eggs were also present confirms its human origin.

e) The coprolites were found in human occupation layers as the cultural remains collected showed.

It is important, when considering the parameters above, the interrelation among them. Thus, if we could not be certain of the human origin of one coprolite by its shape, colour of the solution and smell, the microscopic examination will be more elucidative. The presence of human parasites will add a fundamental basis to the analysis.

The coprolites of the *Gruta do Gentio II* were considered of human origin for they possessed, beyond the dark colour, opacity and foetid odour, helminth eggs whose characteristics were similar to the human whipworm and hookworm, and the fact that they were collected in an indian occupation area dated of a period ranging from 3,500 to 500 BP.

The presence of a human hookworm, probably *Necator americanus*, among brazilian indians in ages before the European and African penetration, make us discuss the introduction of human parasites in our continent.

Schistosomiasis and Ancylostomiasis are commonly referred as parasitic diseases imported from Africa with the slave trade.

The African origin of *Schistosoma mansoni* is categorically affirmed by Freitas (1935) who dated its penetration in our country in the XVII century, based in a text of Piso (1648). However, Magalhães & Dias (1944) argued about the possible existence of Schistosomiasis among the indians, before the discovery of Brazil by the Portuguese.

Paraense (1959) commented on the African origin of Schistosomiasis, concluding that it is not so evident and the actual distribution of the 3 human species of *Schistosoma* suggests the possibility of the existence of an evolution center separated for each one in the past, and thus *Schistosoma mansoni* could be originally from South America.

We think that the finding of parasitological proofs in archaeological material will bring the definite answer to this discussion.

The origin of Ancylostomiasis in Brazil has also been discussed and Darling (1921), based on

geographical distribution of human hookworms, suggested that the American man could come from: a) A population without Ancylostomids derived from Asiatic ancestors, coming by the Behring strait. b) A population with mixed infections of *Necator americanus* and *Ancylostoma duodenale*. c) A population with a pure infection of *Necator americanus* derived from Polynesian or Indonesian ancestors, coming from transpacific migrations. Smilie (1922) situated the coming of hookworms to South America, more specifically to Brazil, by conclusions of the prevalence of *N. americanus* in Africans and *A. duodenale* in Europeans. Thus, a great dissemination of *N. americanus* was made by the African slaves on an insignificant population of *A. duodenale* spreaded by the Portuguese. With imigrations from Japan and Italy the last nematode reached the rate *N. americanus*.

Darling (1921) and Soper (1927) were interested on the presence or absence of human hookworms in South America in prehistoric times and also on the possible routes of migration that their hosts followed.

Manter (1967), based on archaeological findings that indicate a transpacific contact in 3000 BC, between Japanese fishermen and South America and of an Asiatic culture with Equador in 200 BC, said that the two species of Ancylostomids probably had come separated from Asia to America in ancient times.

Fonseca (1972) discussed parasitism and prehistoric human migrations and, among the parasites studied are the Ancylostomids. He used to reinforce his impressions the chronicle of Gabriel Soares de Sousa (1587) who observed a typical clinical picture of Ancylostomosis among the indians.

To this annotation we can add another, of del Castillo (1927) when this chronist visited, in 1519, the city of Tenochtitlaú, the Aztec central Empire, when he noted the custom of the indians to make "breads" of certain special argila that they found in the lake and was "similar" to cheese.

This is very interesting for we can see still today, in Brazil's interior, the practice of selling little clay bricks to be consumed by people with anaemia.

The confirmation of the presence of human hookworms in prehistoric times was made by

Allison *et al.* (1974) when they found adults of *A. duodenale* in the small intestine of a Peruvian mummy, and here in Brazil, by Ferreira *et al.* (1979) when they described Ancylostomide eggs in human coprolites of 3,500 to 500 years old.

If Ancylostomosis were already in South America among indians, the parasite came with their hosts by another route than that of the Behring strait, for, as Darling (1921), Soper (1927) and Fonseca (1972) pointed out, the Ancylostomid larvae would not resist the low temperature of the soil.

Fonseca (1972) when referred to Smilie (1922) observed that this author found a rate of one *Ancylostoma* to 54 *Necator* in an indian population and as he examined the neobrazilian population of the area, the relation increased to 1 *Ancylostoma* to 194 *Necator*. Fonseca (1972) concluded that first there was a penetration of *A. duodenale* in South America in prehistoric times, and after, an introduction of *N. americanus* by African slaves in historical times.

When we found Ancylostomid eggs whose measurements are compatible to that of *N. americanus*, in 3,500 to 500 years old human coprolites in our country, we establish another origin, not African, for this parasite.

It is necessary to note that the slave and the colonization by Europeans and Japanese increased and contributed to the dispersion of the Ancylostomids in our territory, but it was the transpacific migrations that introduced them here.

The Asiatic migrations and the origins of South American man are discussed by Meggers & Evans (1966) and Meggers (1979), who compared the archaeological findings in South and Central America with those of India and Japan.

It is important to add to this discussion a negative finding, the importance of which is noted by Fonseca (1972): the lack, in our samples, of *Ascaris lumbricoides* eggs. Beaver (1964) in Oceania and Soper (1927) in Paraguay also noted this in isolated tribes. This can be used as a counter proof of oceanic origin of certain South American populations.

The numerous coprolites from Grande Abrigo de Santana do Riacho are of the same animal species, since they had the same shape and

were found grouped animal, as they are of insect remains.

We found nematode fragments and to make origin we asked the arthropods in the site and lizards (*Tropidurus Paranharyngodon* Oxyuroidea) with those found in the coprolites.

When compared feces of *Tropidurus* desiccated on earth and morphology. The mean 78,37 ± 4,27 µm x 41, to those of the coprolites 39,21 ± 3,67 µm (10).

Travassos (1927) description of the *N. sceleratus* in *Tropidurus* sp. This parasite was found in the family Iguanidae as follows: *Tropidurus torquatus* e *Tropidurus torquatus* Baruš (1973): *Tropidurus* (1977): *Tropidurus* sp.

In the family *Gemmatylus mabouia* and in the family *Tropidurus* (Rodrigues & Pinto, 1973).

The key to the identification (Baruš, 1973) limited to those found in coprolites: *P. sceleratus*, *P. cubensis* two are only found in our territory.

We believe that, in our territory, the eggs are of *P. sceleratus*. The genus *Paraparasitium* distributed all over the world was recorded up to date in the Galapagos.

Among the known species of *A. ameiva* have wide distribution in the Brazilian territory savannah (Vanzolini, 1963).

It is possible that parasitism like this could be used as data to throw light on the origin of the species by Vanzolini (1963; 1966) & Williams (1970) on the

were found grouped and are of an insectivorous animal, as they are composed almost exclusively of insect remains.

We found nematode eggs among the insect fragments and to make an hypothesis about their origin we asked the archaeologists to capture small animals in the site area. In the small intestine of lizards (*Tropidurus sp.*) we found adult *Parapharyngodon sceleratus* (Nematoda, Oxyuroidea) with numerous eggs identical to those found in the coprolites.

When compared the coprolites with recent feces of *Tropidurus torquatus* artificially desiccated on earth and sand, we found a similar morphology. The measurement of the eggs are  $78,37 \pm 4,27 \mu\text{m} \times 41,65 \pm 0 \mu\text{m}$  (10) as compared to those of the coprolites:  $80,57 \pm 4,14 \mu\text{m} \times 39,21 \pm 3,67 \mu\text{m}$  (10).

Travassos (1923) published the original description of the Nematode *Parapharyngodon sceleratus* in *Tropidurus torquatus* and *Tropidurus sp.* This parasite was found in hosts of the family Iguanidae as follows: Travassos (1923): *Tropidurus torquatus* e *Tropidurus sp.*; Pereira (1935): *Tropidurus torquatus* e *Tapinurus scutipunctatus*; Baruš (1973): *Tropidurus albermalensis*; Vicente (1977): *Tropidurus spinulosus*.

In the family Gekkonidae it was found in *Hemidactylus mabouia* (Alho e Rodrigues, 1963) and in the family Teiidae in *Ameiva ameiva* (Rodrigues & Pinto, 1967).

The key to the species of *Parapharyngodon* (Baruš, 1973) limited the diagnosis of the eggs found in coprolites to 3 species of parasites: *P. sceleratus*, *P. cubensis* and *P. bassii*; the last two are only found in Cuban hosts and so we can believe that, in our archaeological material, the eggs are of *P. sceleratus*.

The genus *Parapharyngodon* has its species distributed all over the world, but *P. sceleratus* was recorded up to date only in hosts from Brazil and Galapagos.

Among the known hosts, *T. torquatus* and *A. ameiva* have wide geographical distribution in the Brazilian territory, occurring in forests and savannah (Vanzolini, 1963).

It is possible that records of ancient parasitism like this could be used as additional data to throw light on the discussions enhanced by Vanzolini (1963; 1970; 1974) and Vanzolini & Williams (1970) on the evolution and geographic

differentiation of vertebrates in relation to changes in the paleoclimate and vegetation.

## RESUMO

Trabalhamos com coprólitos coletados durante escavações em grutas ocupadas pelo homem, em Minas Gerais, e enviadas a nós pelos arqueólogos André Prous, Ondemar Dias e Eliana Carvalho.

Utilizamos para análise do material o método de reidratação proposto por Callen & Cameron (1960) e, para o exame parasitológico, a técnica de sedimentação espontânea desenvolvida por Lutz (1919), com excelentes resultados.

Identificamos 36 coprólitos entre 50 formas suspeitas da Gruta do Gentio II, no município de Unaí. Os coprólitos, com datações de  $3.490 \pm 120$  anos a  $430 \pm 70$  anos, revelaram a presença de larvas e ovos de ancilostomídeos e *Trichuris* humanos.

De 31 amostras de Lapa Vermelha IV e Lapa Pequena, respectivamente em Lagoa Santa e Montes Claros, encontramos somente 5 coprólitos a cuja origem não nos foi possível chegar.

Do Grande Abrigo de Santana do Riacho examinamos 6 amostras e entre estas, quatro contendo numerosos coprólitos de lagartos, datados aproximadamente de 10.000 anos e encontramos ovos de *Parapharyngodon sp.* (Nematoda, Oxyuroidea).

A presença de ovos de ancilostomídeos em coprólitos humanos de épocas anteriores à penetração de europeus e africanos para o interior do país, vem confirmar uma origem transpacífica de algumas populações indígenas sul-americanas.

## SUMMARY

We worked with coprolites collected during excavations in caves that were occupied by man in Minas Gerais, and sent to us by the archaeologists André Prous, Ondemar Dias and Eliana Carvalho. The coprolites were rehydrated by the method of Callen & Cameron (1960) and parasitological examination was performed after spontaneous sedimentation (Lutz, 1919). Thirty-six coprolites were identified among 50 suspected forms from the Gruta do Gentio II, Unaí. The coprolites, from  $3,490 \pm 120$  BP to  $430 \pm 70$  BP, revealed the presence of larvae and eggs of human Ancylostomids and *Trichuris trichiura*. Eggs of

*Parapharyngodon* sp. (Nematoda, Oxyuroidea) were also found in lizards's coprolites from Grande Abrigo de Santana do Riacho, dated nearly 10,000 years.

The presence of eggs of human kookworms in coprolites of a period dated before the penetration of Europeans and Africans to the country's interior, confirms a transpacific origin of certain south-american populations.

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