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The presence of lettuce (Lactuca Sativa) parasites commercialized at fairs in Santarém-PA

La presencia de parasitos em lechuga (Lactuca Sativa) comercializada em férias em el municipio de Santarém-PA

A presença de parasitas em alfaces (Lactuca Sativa) comercializados em feiras no município de Santarém-PA

ABSTRACT
OBJECTIVES: To evaluate the possible presence of parasites in samples of lettuce sold at fairs in the municipality of Santarém-PA in 2019. MATERIAL AND METHODS: This is an exploratory, cross-sectional study, with a descriptive method, and a quantitative and qualitative approach, where 51 samples of Lactuca sativa were collected between August and September 2019, in three trade fairs in the municipality of Santarém-PA. The samples were analyzed in the laboratory. RESULTS: Among the analyzed samples, 16 were negative for some parasite and 35 samples were positive, of which 07 samples were contaminated with Balantidium coli and 28 with Giardia Lamblia. CONCLUSION: The lettuces analyzed proved to be an important means of transmitting parasitic diseases, with the need for measures that improve the hygienic-sanitary quality of vegetables.
DESCRIPTORS: Lettuce; Public Health; Vegetables; Parasites.

RESUMEN
OBJETIVOS: Evaluar la posible presencia de parásitos en muestras de lechuga vendidas en ferias en el municipio de Santarém-PA en 2019. MATERIAL Y MÉTODOS: Este es un estudio exploratorio, transversal, con un método descriptivo, y un enfoque cuantitativo y cualitativo, donde se recolectaron 51 muestras de Lactuca sativa entre agosto y septiembre de 2019, en tres ferias en el municipio de Santarém-PA. Las muestras fueron analizadas en el laboratorio. RESULTADOS: Entre las muestras analizadas, 16 fueron negativas para algunos parásitos y 35 muestras positivas, de las cuales 07 fueron contaminadas con Balantidium coli y 28 con Giardia Lamblia. CONCLUSIÓN: Las lechugas analizadas demostraron ser un medio importante de transmisión de enfermedades parasitarias, con la necesidad de medidas que mejoren la calidad higiénico-sanitaria de los vegetales.
DESCRIPTORES: Lechuga; Salud Pública; Verduras; Parásitos.

RESUMO
OBJETIVOS: Avaliar a possível presença de parasitas em amostras de alfaces comercializados em feiras do município de Santarém-PA no ano de 2019. MATERIAL E MÉTODOS: Trata-se de um estudo exploratório, transversal, de método descritivo, e abordagem quanti-qualitativa, onde foram colhidas, entre os meses de agosto a setembro de 2019, 51 amostras da Lactuca sativa, em três feiras de comercialização no município de Santarém-PA. As amostras foram analisadas em laboratório. RESULTADOS: Dentre as amostras analisadas, 16 apresentaram-se negativas para algum parasita e 35 amostras apresentaram-se positivas das quais 07 amostras estavam contaminadas com Balantidium coli e 28 com Giardia Lamblia. CONCLUSÃO: As alfaces analisadas mostraram-se ser um importante meio de transmissão de doenças parasitárias, tendo a necessidade de medidas que melhorem a qualidade higiênica-sanitária das hortaliças.
DESCRITORES: Alface; Saúde Pública; Hortaliças; Parasitas.

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INTRODUCTION

Currently, there are countless cases of people infected with parasitic diseases that regularly affect the public health of the general population, it is estimated that it is the cause of several diseases, mainly in children and the elderly, and it is estimated that approximately 450 million people in the world, are infected daily. It is associated with several factors, including inadequate sanitation facilities on both public and rural roads, socio-cultural factors, inadequate food handling, and water contaminated by parasites, lack of basic sanitation and contact with contaminated animals[1].

Vegetables are parasitic transmitters, as they may contain cysts of protozoa, eggs and helminth larvae; due to the lack of an adequate sanitary condition of these vegetables, the main forms of contamination of these vegetables are through environmental contamination of the soil through the use of fertilizer with fecal waste and fecal water pollution used in the irrigation of these vegetables[2].

Parasites are organisms that need the host to survive and their parasitic forms can be helminths, protozoa or arthropods, they can be of two types: ectoparasites, which are the parasites that live in the external environment; and the endoparasite, those who live indoors[3].

Transmissions of these parasites generally occur passively orally, affecting individuals of all ages, causing anemia, diarrhea, weight loss, decreased learning, and reduced growth speed. The analysis of the presence of parasites in vegetables is very important, as it provides data on the hygiene conditions involved in the handling, handling, storage, transport, container and contaminated equipment, which may come to contaminate its consumers[4].

Most of these diseases occur mainly from food contamination, which are of great importance to public health, which need good hygienic and sanitary conditions suitable for human consumption[2].

These parasites can inhabit inside or outside the host, extracting food and shelter, which affect the host's nutritional balance and nutrient absorption, thereby inducing intestinal bleeding, reducing food intake and even intestinal obstruction[5].

A diarrhea, malnutrition, anorexia, weight loss and abdominal pain are some consequences and symptoms of intestinal parasites. This disease often acts silently, making diagnosis, appropriate treatment and prophylaxis of possible reinfection difficult[6].

Among the main intestinal parasites, there are: amoebiasis, giardiasis, balantidiasis, ascariasis, hookworm and strongyloidiasis.

Amoebiasis is caused by the protozoan Entamoeba Histolytica, which is a pseudopod, which causes proteolysis and lysis to the tissue, which can induce apoptosis of the host cell. It is transmitted via the fecal-oral route, through contamination of infectious cysts in food and water, but sexual transmission is also possible, especially in oral-anal practices. There are other species of amoeba, but among them, Entamoeba Histolytica is the only one considered pathogenic. This parasite can manifest itself in two ways: intestinal and extra intestinal[7]. The intestinal form has a non-pathogenic condition, where complications occur in the large intestine and pathogenic conditions in the intestinal wall, liver, and other organs, which can occur simultaneously

Among the main symptoms, prolonged abdominal pain, diarrhea, dysentery, fever, flatulence, and bloating. In more extreme cases, extensive mucosal necrosis, ulcerative colitis, anemia, appendicitis, peritonitis, and intestinal perforation may occur. In the extra intestinal form, trophozoites reach the organs through the bloodstream, mainly in the liver, in which they cause the formation of abscesses and the development of a fatal condition[7].

Giardiasis (Giardia Lamblia) is caused by Giardia Duodenalis, a parasite of the small intestine of mammals, birds, reptiles, and amphibians, which comes in two forms: trophozoite and cyst. It is transmitted by ingesting cysts present in contaminated water and food or via the fecal-oral route. It is an intestinal parasitosis that affects the individual's physical and nutritional status, as it attaches to the intestinal wall, preventing the absorption of nutrients. They mainly affect children and may cause growth retardation due to intestinal malabsorption. Generally, this parasitosis is asymptomatic, but when you have symptoms, the most common are: acute diarrhea with intestinal cramps, anorexia, nausea and vomiting, gas, heartburn, among others[3].

Balantidiasis is caused by Balantidium coli, a parasite that has two forms: cysts and trophozoites, it is a ciliated parasite. It is transmitted by eating contaminated food, water and even hands. It usually lives in the light of the host's large intestine, not being able to penetrate intact mucous membranes alone, it is only able to penetrate mucous membranes if it is already injured and, as it produces hyaluronidase, increasing this initial lesion even causing localized necrosis and ulcers . The most common symptoms found are diarrhea, weather, anorexia, abdominal pain, weakness, and fever. These lesions and symptoms are similar to that of amoebiasis[8].

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Ascariasis is caused by the nematode Ascaris lumbricoides, popularly known as roundworm. It is the most common helminth in humans, with children being the most affected. The form of infection is through the embryonated egg, containing second stage larvae and the route of transmission is oral. Most infections are mild and clinically benign. It is usually asymptomatic[9].

Human hookworm can be caused by three etiologic agents: Ancylostoma duodenalis, Necator americanus and Ancylostoma Ceylanicum. A. duodenalis and the American Necator are the main hookworms, in which in the adult stage they play gastrointestinal parasitism in humans, whereas A. ceylanicum has the definitive host for domestic canids and felids, although they also parasitize humans. A. duodenalis has its form of transmission via transcutaneous and oral, being the most effective oral route, and N. americana, infects more through transcutaneous route. A. ceylanicum is the most disseminated orally. The main signs and symptoms are: stinging sensation, hyperemia, itching, and edema that can result in a form of urticaria dermatitis[10].

Strongyloidiasis is an infection caused by the helminth of the genus Strongyloides. Its most common form of transmission is through the larva's penetration through the skin, but it is also transmitted by ingestion of water and food contaminated with Strongyloide stercoralis larvae. Generally, despite having a stimulus from the immune system, this parasite cannot be eliminated, becoming a chronic disease carrier. The presence of eggs or larvae of this helminth in the mucosa of the small intestine can result in inflammation, which can lead to extensive ulcerations[11].

The consumption of vegetables becomes very important due to their

functional properties, since most vegetables are excellent sources of mineral salts, vitamins and antioxidant substances. However, the consumption of fresh vegetables can also present health risks, the main potential risks are related to chemical and microbiological contamination that can occur during their production[12].

Vegetables, especially those eaten raw, such as lettuce, are of paramount importance for public health, they are widely consumed by the population, they have the risk of containing cyst of protozoa or eggs and larvae of helminths, these being important ways of contamination of parasites. The main forms of infection by parasites in vegetables are water contaminated with feces of human origin, which is used in irrigation or also for contamination of the soil and inadequate ways of handling and transporting vegetables[13].

Lettuce (Lactuca sativa L.) from the Asteraceae family is one of the most consumed vegetables in Brazil, it is rich in vitamins A, B1, B2, B5, calcium, potassium, sodium, iron, silicon, fluorine, magnesium and also in properties medicinal, such as: soothing, diuretic, peptic, laxative, mineralized, deoxidizing, vitalizing and purifying. In addition to its beneficial effects in relation to the health of the population, lettuce has its low cost, easy to grow, so it is widely consumed in Brazil[14,15].

In developing countries, in rural and urban areas, due to poor sanitation conditions, parasites are frequent, and vegetables are one of the main routes of parasite transmission. The habit of consuming fresh vegetables facilitates the exposure of most of the population to forms of infection by parasites. Children, the elderly and people with immune disorders are the ones most susceptible to being infected by these opportunistic parasites, such as: Giárdia sp, Entamoeba sp, Cryptosporidium sp, and Isospora sp[4,16].

The present study aimed to analyze the presence of parasites in lettuces sold at fairs in the City of Santarém-Pará, which these vegetables are known as the most consumed leafy vegetables in Brazil, brought to the country through the Portuguese in the mid-16th century. , it brings benefits to the population by being well cleaned until the population's tables arrive. Given this premise: What are the types of parasites found in Lactuca Sativa, at the fairs in the municipality of Santarém-Pará?

METHODOLOGY

This is an exploratory, cross-sectional study with a descriptive method and quantitative and qualitative approach, carried out in the field and analyzed by the Hoffman method (spontaneous sedimentation) for the presence of parasites in lettuces sold at fairs in the municipality of Santarém-PA in the period from August to September 2019.

Between August and September 2019, 51 samples of lettuce (Lactuca sativa) were collected at three trade fairs in the municipality of Santarém-PA. Among the explored environments, the Feira da Cohab, Feira do Velho airport and Feira do Mercadão 2000, each one of different neighborhoods. At each fair, 5 different stalls were chosen and from 3 to 4 lettuces were selected, totaling 17 lettuces per fair. To obtain and transport these samples, the plastic bags available at the stalls were used. After selecting the vegetables, they were taken to the Biovida Laboratory to carry out the analysis process.

In the laboratory, the vegetables were defoliated in some parts and placed in a container with distilled water, leaving it to rest for 15 minutes. Based on Hoffman's method of sedimentation, after 15 minutes the leaves were removed and the liquid from the container was filtered through gauze and left to stand for 24 hours in a comical cup for sedimentation. The next day, with the aid of a Pasteur pipette, a quantity of the sediment sample was taken and placed on a slide with a drop of lugol dye, and another slide without lugol dye and covering it with the coverslip and analyzed in an optical microscope by the direct method. They were analyzed in the 40x objectives, to make the identification of parasitic structures, in the 51 samples of lettuce.

RESULTS

This study was based on the Hoffman method, of spontaneous sedimentation, where 51 samples were analyzed, among which 16 samples were negative for some parasitic structure, and 35 samples were positive for parasitic structures, of which 28 samples were contaminated with Giardia lamblia and 07 samples were contaminated with Balantidium coli. Let's see in Table 1 below:

When analyzing Table 1, it can be seen that at the Aeroporto Velho fair we had contamination only by Giárdia sp. (35.72%) and 43.75% of

Table 1. Result of parasitological analysis of 51 vegetables, according to species and fairs/neighborhood. Santarém, PA, Brazil, 2019.

Feiras	Balantidium sp.	%	Giardia sp.	%	Negativo	%
Aeroporto Velho	0	-	10	35,72	7	43,75
Cohab	5	71,4	9	32,14	3	18,75
Mercadão 2000	2	28,6	9	32,14	6	37,5
TOTAL	7	100,0	28	100,0	16	100,00

negative samples for some parasitic structure, compared to two other fairs, was the place with the highest contamination rate by Giárdia sp.

At the Cohab fair we had contamination by Balantidium sp. (71.4%) and Giárdia sp. (32.14%), with contamination by Giárdia sp. and 18.75% of negative samples for parasitic structure.

At the Mercadão fair we also had contamination by Balantidium sp. (28.6%) and by Giárdia sp. (32.14%) and a total of 37.5% of negative samples for parasitic structures.

There was a prevalence of positive samples for some parasitic structure, with Giárdia sp. the most prevalent parasite with 28 contaminated samples, of the 51 samples analyzed. At the three fairs, Giárdia sp. was the most frequent, and at the Airport fair it was the one with the highest contamination rate by Giárdia sp.e no contamination by Balantidium sp. and the Cohab and Mercadão fair had the same percentage of contamination (32.14%) by Giárdia sp. If we made a comparison, the Cohab fair had a higher rate of contamination by parasitic structures.

DISCUSSION

Several vegetables, especially lettuce, are often used for microscopic analysis to verify the presence of some parasitic structure. The results obtained allowed to evaluate the incidence of parasitic contamination of samples of lettuce sold at fairs in the municipality of Santarém-PA, used in this study.

Chart 1 below is represented on the incidence for the cases of Giardia sp. and Balantidium sp. found in the locations selected by this study; and negative results were also present in the three locations.

According to Chart 1, among the most common parasites on lettuce, it was observed that Balantidium sp., In the Cohab neighborhood, being quite ascending, presenting 71.4%, different and lower than that identified in Mercadão (28%). In studies[17] it was detected, for some endoparasite species (s), among the 90 samples studied, 63 contained parasitic contamination, that is, 70%.

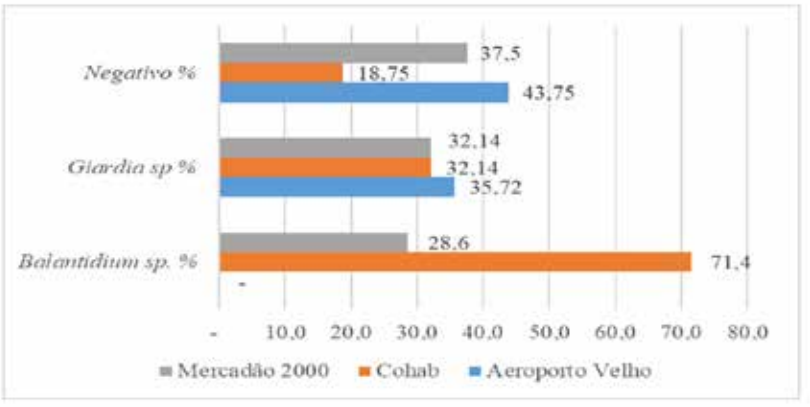
Still in the district of Cohab, in this Chart 1, the index of Giárdia sp, was lower and equivalent to the result of Mercadão 2000, both presenting 32.14%, different from that detected in the neighborhood of Aeroporto Velho (35.72%), where the The predominance of this parasite was slightly higher than the other sites, despite being the one that presented the most negative results for contamination. In study[18] carried out in Niterói-RJ, although the types of parasites were not specified, it was also found that of the 120 samples of lettuce analyzed, 41 were contaminated by some type of parasite, that is, 34% were positive.

A study[19], in his analysis from 20 samples also in open markets, he pointed to a prevalence of Entamoeba histolytica (65%), Giardia sp. (15%), Schistosoma mansoni (10%), Ancylostoma sp. (15%), Ascaris lumbricoides (5%) and Trichuris trichiuria (5%). Through this other study, lettuces are not always exempt by some type of inhabitant of the being that hosts them.

In Chart 1, therefore, in the case of negativity of endoparasite cases in a decreasing order, in the neighborhood of Aeroporto Velho (43.75%), Mercadão 2000 (37.5%) and Cohab (18.75%), that is, again, due to the high number of contamination by Balantidium sp. found in the Cohab neighborhood, the negative results were lower in relation to the others. It is worth mentioning that, of the two types of parasites identified, negativity must be carefully considered at Mercadão 2000 and at Aeroporto Velho, as opposed to the Cohab neighborhood, where there was less negative incidence for one of the types of these pathogens.

According to Resolution No. 12/78, of the National Commission for Norms and Standards for Food (CNNPA), good quality vegetables are those that are in good quality at the microscope level, without dirt, at the macroscopic level and, still, free from parasites and/or larvae. Unfortunately, not only for this survey but also for that of other authors presented, despite the existence of this coherent resolution, the public health problems related to parasites

Chart 1. Percentage of lettuce samples with absence or presence of some parasitic structure according to neighborhoods. Santarém-Pará, PA, Brazil, 2019.



reverberate through failure, especially in the handling of this plant in all its phases, however, generating dissatisfaction in qualitative standards and directly affecting those who consume them.

CONCLUSION

The presence of these parasites in lettuce can be an indication of poor hygiene in planting, irrigation, storage, and transportation, since good hygiene is essential against foodborne diseases. Control and prevention are possible if simple hygienic measures are adopted, which will improve the population's quality of life.

It is concluded that the vegetables in question analyzed, which were sold at fairs in the municipality of Santarém-PA, may have some fundamental prominence in intestinal parasites, requiring prophylactic measures to improve hygiene, both the producer and the consumer must take these measures.

Control and prevention are possible if simple hygienic measures are adopted, which will improve the population's quality of life.

It is intended, through this study, to list bibliographic basis to other literature, as well as in the practical range about the knowledge of the parasites identified in these vegetables; and mechanism, at the level of vision, specified on the types of microorganisms pathogenic to human health. Thus, Epidemiological Surveillance is a body that provides actions to detect and prevent any unusual changes arising from the environment and capable of adopting collective measures to promote human health. ■

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