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Fighting Malaria in Central Africa: Between an Eradication Project and Long-term Control of a Holoendemic Disease (1950 - 1970)

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Abstract:

This article aims to shed light on the fight against malaria in Central Africa, from the birth of the WHO to the end of the 1970s. It re-examines the role of international health policies developed by the WHO in the fight against this disease. The text thus attempts to identify the main policies implemented at various scales to fight against this epidemic, the actors and actor networks engaged in this battle, and its implications on the political, economic and socio-cultural development of the territories concerned. It is thus based on the methodological tools of transnational social history (historical comparisons and various transfers), and on a rich and varied documentation, collected mainly from the WHO archives in Brazzaville and Geneva, the colonial archives of Paris, the african archives of Brussels, and those of the various countries of the African sub-region (Cameroon, Congo, Gabon). The text leads to the identification of the reasons which justify the long-term control of malaria, rather than its eradication, by emphasizing on the case of Cameroon identified in 1956, as the only Pilot Experimentation Zone (PEZ) in Central Africa.

Keywords:

Malaria, WHO, international health policies, Central Africa, health development.

Introduction:

From Latin *palus, paludis* (swamp), malaria is a parasitic disease caused by a parasitic protozoan of the blood, Plasmodium sp or Laveran's hematozoan, of which there are four pathogenic types to humans: *P. falciparum*, *P. ovale*, *P. vivax* and *P. malariae*. The disease is transmitted by the mosquito (the female anopheles) bites and manifests itself by an attack of intermittent fever, following a characteristic rhythm (third or quarte fever), headache, polyarthralgia and deterioration of the general well-being. For this disease, which is one of the oldest in the world, the first control campaigns consisted of the application of mainly local prophylactic methods. These methods were based on the fight against mosquitoes by destroying parasitic niches and promoting the use of mosquito nets designed for the first time by the

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Egyptians¹. It was only later (1874) that the first insecticides such as DDT (dichloro-diphenyl-trichloroethane) or DLD (dieltrin) were introduced, used until their ban in the early 1970s, in areas highly endemic or identified as such.

On the other hand, it was around the sixteenth century that the curative treatment of malaria began in the West, notably with the discovery in Peru of cinchona bark. The development of quinine from this bark opened the way to new treatments and prophylaxis². So in 1923, the League of Nations Health Organization (LNHO) initiated the first international campaigns against malaria. It is also worth highlighting the important role played by the Rockefeller Foundation's Health Organization³. Interrupted by World War II, these campaigns resumed in 1940 with the assistance of the United Nations Relief and Rehabilitation Administration (UNRRA) and later in 1950 with the advent of the WHO. Until the late 1960s, malaria was still a public health problem in Europe and many areas of the United States. Following intense disinsection and chemoprophylaxis campaigns, the disease was virtually eradicated⁴. However, there is still a small number of infected people, who rightly or wrongly were considered "import" cases.

In the so-called « developing areas » where the international control campaigns were beginning at the same time, the situation was becoming more complicated. In Africa, for example, the malaria eradication campaigns set up by the colonial administrations, with the support of the International Children's Relief Fund – now UNICEF– (main provider of funds) and of WHO (main provider of technical supervisory staff), have only helped to worsen the situation. As a result, these actions helped to annihilate any attempt to develop these countries⁵.

¹ Fearing mosquito bites, the Egyptians invented the mosquito net. They therefore use nets, which help them during the day to catch fish and at night to wrap their bed. See Bernard Ziskind, "Malaria: a Plague of Ancient Egypt," *La Revue du Praticien* 59(4) (2009): 586-89.

² Jane Achan et al., "Quinine, an old anti-malarial drug in a modern world: role in the treatment of malaria," *Malaria Journal* 10, 1 (2011): 144, accessed April 1st, 2021. <https://doi.org/10.1186/1475-2875-10-144>

³ See in this regard: Anne-Emmanuelle Birn and Elizabeth Fee, "The Rockefeller Foundation and the International Health Agenda," *The Lancet* 381 (2013): 9878, accessed April 1st, 2021, DOI: [https://doi.org/10.1016/S0140-6736\(13\)61013-2](https://doi.org/10.1016/S0140-6736(13)61013-2) ; John Farley, *To Cast Out Disease: A History of the International Health Division of the Rockefeller Foundation (1913-1951)* (Oxford: Oxford University Press, 2004), 107-138.

⁴ For an in-depth reflection on disease eradication and malaria in particular, see: James L. A. Webb Jr, *The Long Struggle Against Malaria in Tropical Africa* (New York, Cambridge: Cambridge University Press, 2014) ; Nancy L. Stepan, *Eradication: Ridding the World of Diseases Forever?* (London: Reaktion Books, 2011) ; James L. A. Webb Jr, *Humanity's Burden. A Global History of Malaria* (Cambridge: Cambridge University Press, 2009) ; etc.

⁵ Josselin Thuilliez, "Malaria and Primary Education: A Cross-country Analysis on Repetition and Completion Rates," *Revue d'Économie du Développement* 17 (2009/5): 127-57, accessed April 1st, 2021, DOI : 10.3917/edd.235.0127 ; Reginal I. Chima, Catherine A. Goodman and Anne Mills, "The Economic Impact of Malaria in Africa: A Critical Review of the Evidence," *Health Policy* 63/1 (2003): 17-36.

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The results were disappointing⁶, despite the possibilities of eradication that were offered. The eradication of this disease in the West is illustrative in this regard. At the same time, recent research works attempt to put forward the idea of "utopian visions of postwar world", transformed into "dream of eradicating diseases", to account for the impossibility that there was, from the start, to achieve effective eradication of malaria⁷.

While some studies address the issue of the survival of malaria in tropical areas and its persistence as a consequence of the ecological and socio-economic conditions of these regions and their populations⁸, others, on the contrary, see them as the result of technical errors, voluntary or not, of certain actors who, through the mass distribution of chloroquine, would have favored the pharmaco-resistance of *plasmodium falciparum*⁹. This article follows this logic and sets out to go beyond these essentially technical analyses which attempt to justify the current malaria situation in Central Africa in particular. The paper thus attempts to put forward the idea that the Malaria Eradication Program (MEP) was certainly "ambitious", but not as "utopian" as one might think. To achieve this, I explore the case study of Cameroon, designated in the early 1950s by international health authorities as the unique Pilot Experimentation Zone (PEZ) in Central Africa. I therefore mean, to carry out a transversal analysis based on a set of scales (international, regional, national, and local). Such an analysis will allow to lead to the establishment of the complementary nature or not, of the health policies implemented within the framework of the fight against malaria. The aim of such approach is to explore the main global factors responsible for the persistence of this epidemic.

Finally, I intend to highlight the role, whether voluntary or not, of those involved in the fight against this pathology in its survival in countries concerned by "technical assistance", and those of Central Africa in particular. The presence of various actors in this field of the fight

⁶ Jacques Hamon et al., "Bilan de quatorze années de lutte contre le paludisme dans les pays francophones d'Afrique tropicale et à Madagascar : considérations sur la persistance de la transmission et perspectives d'avenir," *Bulletin de la Société de Pathologie Exotique* 56/5 (1963): 933-71.

⁷ Heidi Tworek, "Rezension zu: Zimmer, Thomas: *Welt ohne Krankheit. Geschichte der internationalen Gesundheitspolitik 1940-1970* Gottingen 2017," accessed April 1st, 2021, H-Soz-Kult: www.hsozkult.de/publicationreview/id/rezbuecher-27273.

⁸ Marion Borderon and Camille Perchoux, "Le paludisme urbain à Brazzaville : hétérogénéité locale, enjeu global : De la géographie du risque aux stratégies de lutte antipaludique," in *Les "jeux" scalaires de la crise actuelle (financière, économique, sociale, sanitaire, etc.) : entre global et local et inversement*, (Avignon, France, 2010): 247-52 ; Jacques Mouchet, et al. "Le défi de la lutte contre le paludisme en Afrique tropicale : place et limite de la lutte antivectorielle," *Cahiers santé* 1 (1991): 277-88 ; Pierre Gazin et al. "La perception du paludisme en Afrique au Sud du Sahara," *Ann. Soc. belge Méd. Trop.* 68/1 (1988): 1-3.

⁹ Jacques Verdrager, *L'OMS et le paludisme. Mémoires d'un spécialiste de la malaria* (Paris: L'Harmattan, "Col. Acteurs de la science", 2005).

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against malaria justifies an in-depth analysis of various archival funds, and the mobilization of several theoretical approaches which show how their behavior or their lack of interest has an impact on the disease and its management that make it sustainable.

I- Fighting against malaria in Africa: between local management and international actions

1. Malaria in Africa: a continent to be saved from disease?

If malaria was first announced around 400 BC in Europe, where it contributed to the decline of Hellenic civilization, it was in Africa that this disease was first described. The epidemic indeed appeared in hieroglyphic and pictographic writings around 2700 BC in ancient Egypt. Recent paleopathology thus confirms the importance of this parasitosis on newly studied mummies. The annual recurrence of this disease was then linked to the Nile which, by flooding the cultivated lands of the Delta, caused an explosion of anopheles¹⁰. These caused either simple bouts of malaria, or then bilious hemoglobinuric fevers which are often fatal as is still the case today. Children born during this period of flooding were the most affected at the time. To overcome this difficulty, ancient Egyptians focused their efforts on prevention: using mosquito nets, and inventing repellents, to prevent mosquitoes from biting¹¹. This tradition seems to have been perpetuated during the following centuries.

In the rest of the continent, the history of malaria is closely linked to that of the explorers, travelers, missionaries and traders, who for centuries paid a heavy price for the disease. Malaria was indeed the cause of many failures and impressive loss of life during the scramble of Africa¹². The case of Algeria seems illustrative in this regard. Here, for example, the French troops lost at least one in four soldiers. In Madagascar, on the other hand, the conquest of the territory turned into a health disaster. The French army lost 1/3 of its troops there, or nearly 5,000 men, due to malaria. Many other well-known personalities died on the continent as a result of a bout of malaria. Among them were Richard Francis Burton, John Hanning Speke, David Livingstone, and Henry Morton Stanley.

¹⁰ .Ziskind, Malaria, 3-4.

¹¹ . Papyrus Ebers n ° 846. It is a matter for them, of smearing themselves with fresh moringa oil. See also Ziskind, Malaria, 2.

¹² Philip D. Curtin. Death by migration. Europe's encounter with the tropical world in the nineteenth century (Cambridge: Cambridge University Press, 1989).

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Traumatized by this disease, European explorers and later settlers consider Africa to be the "tomb of the white man". The description given in the early 1950s by the French colonial administration is indicative of the influence of this sentiment: "Africa's situation in this regard is certainly more serious. The name is less evocative than that of sleeping sickness, the condition is less spectacular, but the endemic is more uniformly widespread and even more deadly"¹³. Considering this point of view of the settlers does not always explain why and how the populations of this part of the world were able to live and sustain themselves before the European invasion of the continent. Indeed, it seems that the argument of a immune or semi-immune population, generally mobilized, is not sufficient. The idea that local populations had developed original methods (prophylactic and therapeutic) to fight against malaria then appears to be more relevant. This could be verified in Cameroon, where the Sovereign of the Bamum kingdom, Sultan Njoya, had drawn up a nosography and a nosology on malaria, long before the arrival of the Germans in this territory.

The "sacred civilizing mission" which Western colonial administrations have adopted and above all their declared desire for domination, lead them to want to "save" the continent from epidemics, and specifically, from malaria. However, this fight against malaria in the dominated territories aims above all to save Europeans who are much more exposed, in order to allow them to better pursue the work of colonial exploitation. Considered later from the angle of "development of the colonies", the fight against malaria thus easily entered into the project of "economic and social progress", to be put to the credit of the colonists, for the benefit of the dominated territories.

2. From LNHO to WHO: the beginnings of internationalized malaria control

The League of Nations Health Organization (LNHO) was created in 1923 in the aftermath of the First World War, replacing the defunct *Office international d'Hygiène Publique* (OIHP). In 1924 a special commission for malaria was established, whose main mission was the study of the most appropriate means to control malaria on a global level with a view to reducing its impact in the world, and especially in colonized territories. However, the implementation of field projects was almost impossible because, Africa was not a « politically

¹³ Diplomatic Archives of Paris (hereafter DAP), "Note au sujet d'une action sanitaire commune en Afrique », in MAE/DAP, Paludisme, Projet de création d'un bureau de la C.C.T.A. pour la lutte contre le paludisme, (avril-juin 1951 et s.d.)", Afrique-Levant, CCTA 50, K.23.5, E12.

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important region » and the League had little chance or interest to establish a strong presence in this continent which was largely under colonial control¹⁴. The WHO at its birth also adopted the same ambition: reducing malaria impact in the world. Four "major programs" were thus inscribed on the list of its priorities by the Interim Commission on July 1, 1948. These included: malaria, maternal and child health, tuberculosis, and venereal disease. Two basic principles guided this choice: the fact that these projects lent themselves to international action in the health field and the "prime importance" acquired by these problems "as a result of the war"¹⁵. During the debates of the said "Program Commission", two ideas clashed: that of the Ukrainian, Dr O. A. Bogomolets who was in favor of the needed application of chemoprophylaxis of the population as an essential measure of the antimalarial program. On the other hand, the Italian Prof. G. A. Canaperia and the American, Dr. P. F. Russell supported against Bogomolets, the necessary spraying of DDT in the houses. In their opinion, this represented the "main weapon in the fight against malaria"¹⁶. The question was then submitted to a working group. The report presented by Paul Russell¹⁷ to the 6th session of the "Program Commission" on July 5, 1948, foresaw the adoption of international sanitary conventions supposed to prevent the importation of Anopheles into areas where such protection was needed.

Russell's proposal was violently rejected by the Union of South Africa delegate, who held that "such agreements tend to create trade barriers between countries and to give rise, within states themselves, to a sense of security full of danger"¹⁸. The issue of malaria was again referred to the working group, this time joined by the delegate from South Africa. The group agreed the next day on the resolution of a "large-scale fight against malaria", i.e. a fight which would combine chemoprophylaxis, the fight against vector with systematic spraying of insecticides, in particular DDT and dieldrin (DLD). Washington would shoulder the bulk of the

¹⁴ Iris Borowy, "The League of Nations Health Organization: From European to Global Health Concern?," in *International and Local Approaches to Health and Health Care*, ed. Astri Andresen, William Hubbard and Teemu Ryymin (Bergen: University of Bergen, 2010), 17.

¹⁵ WHO Archives in Geneva (hereafter WHOA/GVA), "Commission du Programme : Quatre programmes de l'OMS sur la liste de priorité (discussion sur le paludisme)", Communiqué de Presse n°216, OMS/CP/2, 1^{er} juillet 1948, in WHO/OMS, WHO1_101_1_18.pdf (2nd generation digitized files).

¹⁶ WHOA/GVA, "Commission du Programme. Lutte contre le paludisme : hygiène de la maternité et de l'enfance", Communiqué de Presse n°221, 2 juillet 1948, in WHO/OMS, WHO1_101_1_18.pdf (2nd generation digitized files).

¹⁷ Russell was also member of the Rockefeller Foundation. He worked with the Foundation until 1959.

¹⁸ WHOA, "Sixième séance de la Commission du Programme. Discussion générale sur le paludisme et la tuberculose", Communiqué de Presse n°228s, 5 juillet 1948.

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financial burdens in this large-scale malaria fight. And it is in the interstices of this globalized fight against malaria that the one waged in Central Africa against this epidemic fits.

II- Malaria control in Central Africa: a process with various techniques

1. The anti-vectorial fight against malaria in "equatorial" Africa

It was in June 1949 at the 2nd World Health Assembly (WHA) held in Rome that Dr Chishlom, then Director General of WHO, proposed to convene a "Malaria Conference in Equatorial Africa". He suggested that a "high priority" should be devoted to this conference. This unprecedented international meeting was actually held on November 27, 1950 at Kampala City Hall, under the chairmanship of Dr R. S. F. Hennessey, Director of Medical Services at Entebbe (Uganda). Also present: the Governor of Uganda, Sir John Hathorn Hall, and Dr Pierre Dorolle, Deputy Director of WHO, and bearer of a message from the UN Secretary-General. Most of the debates focused on "malaria eradication pilot projects based primarily on the use of residual insecticides"¹⁹. It was recommended to the colonial administrations, at the end of this meeting in Kampala, to undertake as soon as possible the antimalarial control by modern methods, whatever the initial degree of endemicity and without waiting for the result of new experiments"²⁰.

By adopting such modern methods of malaria control, there was a question of pushing the indigenous populations to abandon any local process of combating malaria. This is how the spraying of DDT was systematized in all endemo-epidemic areas, or considered as such. The aim of these haphazard systematic vector control campaigns was to alleviate the scale of the demographic, economic and social problems caused by malaria in Africa. However, the rush and the euphoria of the first "successes" of anti-vector control by spraying DDT lead to the adoption in 1955, at the 8th WHA held in Mexico City, of a "World malaria eradication program". Thus took shape, the dream of the American epidemiologist Frederick Lowe Soper (Rockefeller member and designer of the comprehensive malaria eradication program), and many other hygienists in the United States, to see the transmission of the disease interrupted, by time-limited DDT spraying campaigns. Following the cases of resistance observed in Greece

¹⁹ WHO Archives in Brazzaville (hereafter WHOA/BZV), "The malaria eradication programme in the African region", January 1965, in WHO/OMS, Programme for Malaria Eradication in AFRO, M2/372/3 AFRO, file 5.

²⁰ OMS, Rapport de la Conférence du paludisme en Afrique équatoriale. Série de Rapports techniques n°38 (OMS, Genève, 1951): 25.

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as early as 1951, we moved from massive spraying to indoor spraying of DDT. The program was thus implemented in Europe, North Africa, parts of Asia and Latin America. Sub-Saharan Africa was judged "" not ready "and excluded from the supposedly "global" initiative, which therefore ignored the territories that produced 90% of the malaria cases and deaths in the world at that time"²¹. A probably strategic choice, which can be explained by epidemiological and entomological reasons, but also because of costs and logistics involved in such a program.

As early as 1956, the 6th Malaria Expert Committee confirmed that Africa in particular would be excluded from this global strategy of interrupting transmission by indoor spraying. This exclusion was explained, in the opinion of experts, by the "peculiarity" of the vectors encountered in this continent, the lack of knowledge to interrupt transmission and also the lack of financial means and qualified personnel. It is in this vein that Pilot Experimentation Zones (PEZ) was created, where the "possibilities of eradicating malaria" in the continent were to be tested. If the fight against malaria goes slowly in other parts of the continent, it is not the same in Upper-Volta (now Burkina-Faso), Nigeria, Liberia, Dahomey (now Benin), Tanganyika and Uganda and in Cameroon, because these territories had previously been set up as vast areas for experimentation with this "eradication". The WHO and its experts were going to apply low-dose spraying of insecticides there, as confirmed by many expert reports, especially in the case of Cameroon, the only PEZ in Central Africa as we will see later.

2. Chemoprophylactic fight against malaria: towards a savage leveling of the masses

As for the prophylactic fight against malaria, it was done by the use of chloroquine (nivaquine)²². Used in many other territories, the consumption of chloroquine was made compulsory, for children of pre-school and school age, and for pregnant women, in countries where malaria was considered endemic. Schools were given priority, due to the fact that they were the place *par excellence* for "extensive health education of the masses"²³. Churches and other places of worship, health centers and public places, like markets have served the same

²¹ Marcos Cueto, *Cold War, Deadly Fevers: Malaria Eradication in Mexico, 1955-1975* (Washington, D.C., Woodrow Wilson Center Press, Co-published Johns Hopkins University Press, 2007); Alilo S. Martin et al., "Are multilateral malaria research and control programs the most successful? Lessons from the past 100 years in Africa," *Am. J. Trop. Med. Hyg.* 71/2 (2004): 268-78.

²² Olivier Bouchaud et al. "Prophylaxie du paludisme," *La Revue du praticien* 48/3 (1998): 279-86.

²³ Simplicie Ayangma, "Éduquer pour chasser le spectre de la maladie et de la mort : L'éducation pour la santé dans les écoles coloniales et post-coloniales en Afrique centrale (1910-1986)," in *Repenser la « mission civilisatrice »*. L'éducation dans le monde colonial et post-colonial au XX^e siècle, eds. Damiano Matasci et al. (Rennes: Presses Universitaires de Rennes, 2020), 125-140.

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cause. In the case of schools, they offered the advantage of being well-organized environments bringing together well-specified groups of individuals, especially children. This justified, in large part at least, the intervention from the early hours of UNICEF in this malaria control project. The chemoprophylactic experiments initiated in 1956 were carried out by the administration of antimalarial drugs, either in isolation or in combination. Their official aim was to "seek practical methods of application suitable for local conditions"²⁴.

In combination, for example, the organization's experts then prescribe chloroquine and pyrimethamine. The results of these tests carried out by J. Schneider, Langillon, and Delas, were published between March and April 1957, in the *Bulletin de la Société de Pathologie Exotique*. They referred to a total of 250 children under the age of 9, from the village of Guirvidig in Diamaré (Cameroon), who had been subjected to take, once a week, throughout the duration of the experiment (3 months), $\frac{1}{2}$ tablet, ie 75 mg of chloroquine and 6.5 mg of pyrimethamine. This dose corresponds in fact to half of the dose normally prescribed at the Lagos malaria conference in 1955.

If the results, at the end of the experimental period, lead to the conclusion of a drop in the splenic index from 71% to 4%, and a drop in the parasite index from 67% to 0%, the return of the rainy season, a few months later (5 months), was accompanied by a "sudden rise" of the indices during this season, which left, in the opinion of the rapporteur, "to appear that the association used had become incapable of protecting effectively children"²⁵. A very elegant way of translating the consequences that we had achieved, i.e. the resistance of plasmodiums to chloroquine associated with pyrimethamine. However, the interpretations of these results gave rise to the formulation of two hypotheses: either the doses of the drug were insufficient – which was indeed the case as previously noted for the case of Guirvidig – or then it was simply a question of a resistance to pyrimethamine, as had already been observed in other experimental areas, notably in Africa, South-East Asia and South America. To "verify this situation", it was decided to continue the experiments, by dividing into three groups, the populations of children subjected to leveling in schools, at the same frequency, i.e. once a week, for 20 months. This new wave of experimentation was carried out as shown in the following table:

²⁴ WHOA/GVA, "Rapport sur la chimioprophylaxie dans les écoles du Cameroun en tant que mesure de santé publique, dans le cadre de la lutte contre la morbidité globale et l'absentéisme scolaire", in WHO/OMS, Malaria Eradication in Cameroons – Reports Only, M 2/372/3 (b) Cameroons, file 5.

²⁵ WHOA/GVA, "Rapport sur la chimioprophylaxie", 5.

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Table 1: Drug experiments in Cameroon

1 st group	2 nd group	3 rd group
Combination treatment of chloroquine + pyrimethamine at the same dose (75 mg + 6.5 mg)	Double dose pyrimethamine treatment (25 mg)	Double dose chloroquine treatment (300 mg)

The results show maintenance of the parasitic index almost equal to 8%, in the 1st group and 6.1% in the 2nd, while in the 3rd group, there is a significant drop from 5% to 2.9 %²⁶. The conclusions are similar to those of the first experiment: the appearance of "drug resistance after administration for several consecutive months of pyrimethamine". WHO experts remained convinced that isolated reports had "reported in various parts of Africa the presence of strains of *P. falciparum* resistant to chloroquine, but could not prove it by a critical examination". It is in this sense that a "Study on the existence of strains of *P. falciparum* resistant to chloroquine", in Cameroon, was initiated again in 1967, by Dr Samuel Abane, Head of the National Malaria Eradication Service (NMES) and Dr J. Ochrymowicz, the WHO malariologist. This new study, supervised by Dr Delfini (malariologist) and Mr. Caprari (WHO technician), received an organizational grant of \$ 3,500 and was to involve a population of 623,941 students, in the period 1966-1967.

Samples taken from 2,685 of these students led to almost the same conclusions: the resistance of plasmodiums to chloroquine. These methods of savage nivaquinization²⁷ of young Africans, used as human guinea pigs, are similar to what nowadays seems to be done, within the framework of mass campaigns of "polio vaccination". Extended until the years 1979 and beyond, these campaigns of savage leveling of the African masses were carried out under the pressure of the former colonial "power".

III- Malaria control in Cameroon's PEZ: a practical case study

1. The fight against malaria in Cameroon: the only PEZ in the sub-region

The decision to set up demonstration teams at the end of the Kampala meeting of 1950 opportunely crossed the plan of the international health authorities to exclude Africa from the overall malaria eradication strategy. Such exclusion from the continent gave birth to the

²⁶ WHOA/GVA, "Rapport sur la chimioprophylaxie", 6.

²⁷ The total number consumed in schools for 1964 alone is estimated at over 40 million Nivaquine tablets.

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creation of certain areas where the possibilities of eradicating this scourge were to be tested. Only Cameroon was selected in Central Africa as a Pilot Experimentation Zone (PEZ). As a PEZ in fact, Cameroon was divided into two sub-zones: the North and the South, to the exclusion of other parts of the country. In the northern zone, for example, operations began earlier in 1953, with the aim of "proving that the eradication of Malaria was possible in a Sahelian holoendemic zone" by sprays alone or by their association with chemoprophylaxis measures of mass ". This zone covered a restricted area, in 1959, located between the 14th and 15th degrees East and the 10th and 11th degrees North, i.e. an area of 7,500 km², concerning nearly 200,000 individuals. All epidemiological work had been placed under the responsibility of the entomologist of the *Office de la Recherche Scientifique et Technique Outre-Mer* (ORSTOM), J. Mouchet. Alongside Mouchet, the physician-lieutenant, Dr C. Giordano, Head of the Antimalaria Project in the North, and the WHO malariologist, Dr P. Cavalié. These experts decided to apply, in one area, only insecticides, in another, a combination of insecticide and chemoprophylaxis. In 1960, in the insecticide-only zone, there was a plasmodic index ranging from 12 to 61%, against an index ranging from 10 to 15% where the combination of control measures was applied. No interruption of transmission was acquired in this sub-area. It is then concluded that "the failure of operations in North Cameroon was not the only one recorded in the savannah zone"²⁸.

The second sub-zone is that of the South (Yaounde pilot zone) which also covers around 7,500 km². In 1960, it made reference to nearly 232,781 dwellings, for a "protected" population estimated at 220,000. The lieutenant-colonel Dr R. Chastang, then head of the malaria section from the Mobile Hygiene and Prophylaxis Service (MHPS) and Prof. G. A. Livadas, WHO malariologist consultant intervened here in the early 1960s. This area was sprayed from 1953 to 1960. The official results showed a "spectacular drop in the" plasmodic indices "as can be seen in this table:

Table 2: Malaria control in Cameroon: decrease in plasmodic indices in infants and children from 2 to 9 years old

	1953	1959	1960
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²⁸ WHOA/GVA, "Rapport sur la Lutte Antipaludique au Cameroun en 1962", par le médecin Général P. M. Bernard, Conseiller technique au ministère de la coopération, expert paludologue, in WHO/OMS, Malaria Eradication in Cameroons – Reports only, M 2/372/3 (b) Cameroons, file 1 et 2.

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Infants	36,8 %	0 %	0 %
Children from 2 to 9 years old	40,6 %	0,22 %	0 %

Source: WHOA/GVA, "Rapport sur la Lutte Antipaludique au Cameroun en 1962", 2.

The data presented by Dr P. M. Bernard in this report did not differ from those presented two years earlier by Pr G. A. Livadas. He wrote then, in 1960, in a report to Dr C.A. Alvarado, Director of the "Malaria Eradication" division at the WHO headquarters in Geneva: "the transmission of malaria must be considered as interrupted throughout the whole of the Yaounde Pilot Test Zone"²⁹. This announced interruption of malaria in the Yaounde PEZ is not an isolated case. The use of DDT in Sri Lanka, for example, had reduced malaria cases from 2,800,000 to 17 between the start of spraying and the ban on its use. In addition, 500 million people were saved from malaria in Europe, America, Finland to Florida, thanks to these sprayings³⁰. The observation by the WHO expert Livadas of the virtual eradication of malaria in Yaounde led to the holding of a meeting at the Cameroonian Ministry of Public Health on February 17, 1960. This brought together representatives of the WHO (Pr Livadas and Dr Maffi), those of UNICEF (Dr Pierret and M. Berouti), and those of the Cameroonian (Dr Tchoungui) and French governments (the lieutenant -colonel Dr Merle, chief physician of the Mobile Hygiene and Prophylaxis Service (MHPS), and physician-lieutenant-colonel Chastang, Head of the "Malaria" section of the MHPS). This meeting was devoted to "the study of the problems posed by the antimalarial campaigns of Cameroon". During this meeting, it was decided to suspend all spraying of insecticide in the PEZ on the proposal from Livadas and Chastang. The consequences of this choice led to the detection at the end of 1960 of 325 cases of malaria: 21 indigenous cases, 130 sporadic and 71 undetermined. The number of recorded cases rose to over 2,274 in 1961, with over 795 indigenous cases³¹. The resurgence of these new cases was accompanied by that of *A. Gambiae*, the main vector for humans in sub-Saharan Africa.

2. Malaria control in Cameroon's PEZ: from the eradication project to the "pre-eradication" philosophy

²⁹ WHOA/GVA, "Rapport final, par Professeur Dr. G. A. Livadas, consultant O.M.S.", in WHO/OMS, Malaria Eradication in Cameroons – Reports only, M 2/372/3 (b) Cameroons, file 1 + 2.

³⁰ Robert A. Bates, *What Risk? (Science, Politics & Public Health)*, (Oxford: Butterworth & Heinemann, 1997).

³¹ WHOA/GVA, "Rapport final, par Professeur Dr. G. A. Livadas, consultant O.M.S.", in WHO/OMS, Malaria Eradication in Cameroons – Reports only, M 2/372/3 (b) Cameroons, file 1 + 2.

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It was in 1962 that the philosophy of "pre-eradication projects" was conceived, almost generally accepted as a principle, at the 4th Conference on Malaria in Africa held in Yaoundé in July of the same year. A concept if not ambiguous, at least empty, and poorly understood by States, as noted by the WHO Regional Director for Africa, Dr A. Quenum on March 31, 1966, in a correspondence to WHO General Director Dr M. G. Candau. The Regional Director clarified: "The ambiguity of the term 'Malaria Pre-Eradication' is responsible for many misconceptions by different governments". A total of thirteen countries were included in this new program, whose priority was now given, to "development of the infrastructure of basic health services", and the strengthening of "material aid"³². We can then wonder about the type of "infrastructure" that should have been "developed" for indoor spraying of insecticides which had proved their worth elsewhere and in the West especially where malaria had been eradicated towards the end of the years 1960s. It is equally important to question the type of "material aid" that was needed for such an operation, and the purpose of the latter. In other words, is there any reason to see in this attitude of international actors engaged in the fight against malaria in Africa, the will to maintain this disease rather than to see it being eradicated? Isn't the conduct of some of these experts in line with the project of "absolute control" and lasting health policies – and, by extension, campaigns against diseases – of African territories, as he had was formulated very early on by the former colonial powers?

For Cameroon, the "pre-eradication" program was planned for two years. Funded by WHO at \$ 93,400 or about 23 million FCFA. Funding reserved for the payment of international staff, study grants, laboratory equipment, and 9 Renault 4 CV vehicles³³. As for the contribution of the Cameroonian Government, it amounted to 52 million FCFA per year (or about \$ 100,000) mainly intended for the payment of local staff, tours, operation, equipment, and to transport. No action was planned directly related to malaria control itself. The allocation of such types of contributions moreover, prioritized by most IOs and NGOs working in southern countries seems to meet the expectations of a local elite that is more often shady. This kind of contribution is then at the origin of many conflicts of interest and most of the embezzlement at the local level, since it offers only small guarantees of control. In an anonymous memorandum signed in Yaounde on July 27, 1962, the author, certainly a WHO official serving in Cameroon, states:

³² WHOA/GVA, "The malaria eradication programme in the African region", file 5.

³³ WHOA/GVA, "Rapport sur la Lutte Antipaludique au Cameroun en 1962", par le médecin Général P. M. Bernard, Conseiller technique au ministère de la coopération, expert paludologue, p. 7.

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It is a pity that the promises made very recently of active participation by WHO in local expenditure have made this work more difficult, forcing us, without committing WHO to some kind of compromise which results in an increase in the number of vehicles to be provided by WHO, rather than a contribution to local expenditure which would, among other things, offer no real possibility of monitoring the rational use of funds³⁴.

It should be remembered that this program of "pre-eradication of malaria" in Cameroon aimed, among other things, at strengthening the "experimental surveillance system", and the development of the newly created national malaria eradication service (SNEP). Rather than considering it from the point of view of "global eradication", the issue of malaria in Cameroon and in Africa south of the Sahara, in general, had become a "local public health problem", in which there was no longer envisaged definitive long-term solutions, but where "the means to immediately face the most urgent needs of the populations" were now sought³⁵.

The shift from the "eradication" project to that of "pre-eradication" now comes down to simple control of the disease. The consequences of such strategic choices are catastrophic, as noted by J. Mouchet, who was himself one of the most active experts in the implementation of these measures. For this author, the abandonment in Cameroon and elsewhere in Africa, of the "eradication strategy" of malaria in favor of that of a simple "control" has considerably handicapped public health organizations, by making any definition of objectives and even the limits of this control³⁶. But alongside this essentially managerial consequence that Mouchet notes, there were many others, and in particular more or less serious social and economic consequences. These include, among other things, deaths (around 800,000 each year, mainly affecting children aged 0 to 5 and pregnant women), slowing economic growth and increasing poverty, etc.

Conclusion:

The purpose of this article was to analyze the role of WHO in the so-called "malaria control" campaigns carried out by this international agency in the Central Africa countries. In the light of this requirement, I relied on the case of Cameroon, the only Pilot Experimentation Zone (PEZ) in this part of the Meso-African sub-region as defined by WHO in the early 1950s. This analysis highlighted the choices made by WHO experts and other international institutions (especially UNICEF), "technical advisers" to the former colonial powers, and local political

³⁴ WHOA/GVA, Mémoire, Yaoundé le 27 juillet 1962, in WHO/OMS, Plans of operation and related correspondance, malaria eradication in Cameroons, M 2/372/3 (A) Cameroons, file 2.

³⁵ WHOA/GVA, "Rapport sur la Lutte Antipaludique au Cameroun en 1962".

³⁶ Jacques Mouchet et *al.*, Biodiversité du paludisme dans le monde (Paris, John Libbey Eurotext, 2004).

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authorities which led to lasting control of malaria rather than its eradication. The action of local administrations and communities, sometimes resistant to certain policies, must also be taken into account to justify the current malaria situation. To circulate chloroquine in so-called endemic areas, international experts and local political authorities had to consider mass drug consumption, the most obvious consequence of which is the drug resistance of *Plasmodium falciparum*. It seems like this process was intentional and based on the capitalist willingness to sale antimalarial drugs on an industrial scale.

This version of the facts fundamentally calls into question the hypothesis of the ecology of the environment and the standard of living of the populations as the sole and main cause of the persistence of the pathology. It therefore runs counter to the technical, administrative and infrastructural argument linked to "non-development"³⁷, which has been, for several decades – as it is still the case today – used as the main point which explains the persistence of this disease in the tropical zone and in Africa to be specific.

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³⁷ This argument, it should be emphasized, aims rather to justify the necessary establishment of "modern" basic health services, whose essential role is "sanitation, health education" and especially the "distribution of drugs". See WHO/GVA, "BHS Demonstration Zones - Cameroun - 2", Lettre du Dr. M. E. Torfs conseiller en santé publique du projet Cameroun - 2 (services de santé de base), au Dr. L. J. Charles, conseiller régional AFRO du paludisme, 3 novembre 1965.

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