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Evidence of Partnerships in the Cuban Pharmaceutical Sector

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This article analyzes the pharmaceutical partnership agreements of Cuban institutions. It identifies various partnerships with national and foreign firms that spanned 17 countries, with several developed nations appearing as recipients of Cuban technologies, and with Cuban institutions acting as the primary technology holder and licensor in the majority of agreements identified. These findings suggest that Cuba's state-directed pharmaceutical model has produced an active, innovation-generating sector, with potential lessons for other countries, including Brazil, that maintain public pharmaceutical laboratories.

Cet article analyse les accords de partenariat pharmaceutique conclus par des institutions cubaines. Il recense divers partenariats avec des entreprises nationales et étrangères réparties dans 17 pays, dont plusieurs pays développés apparaissent comme bénéficiaires des technologies cubaines, les institutions cubaines agissant en tant que principal détenteur de technologies et concédant de licence dans la majorité des accords recensés. Ces résultats suggèrent que le modèle pharmaceutique cubain, dirigé par l'État, a donné naissance à un secteur dynamique et générateur d'innovation, dont d'autres pays, notamment le Brésil, qui disposent de laboratoires pharmaceutiques publics, pourraient tirer des enseignements.

Este artículo analiza los acuerdos de asociación farmacéutica de las instituciones cubanas. Identifica diversas alianzas con empresas nacionales y extranjeras de 17 países, con varios países desarrollados que aparecen como receptores de tecnologías cubanas, y con instituciones cubanas actuando como principales titulares de tecnología y otorgantes de licencias en la mayoría de los acuerdos. Estos resultados sugieren que el modelo farmacéutico dirigido por el Estado en Cuba ha generado un sector activo e innovador, lo que puede servir de ejemplo para otros países, incluido Brasil, que mantienen laboratorios farmacéuticos públicos.

本文分析了古巴各机构的医药合作协议。研究发现，这些协议涵盖了与古巴国内外企业建立了多种合作关系，涉及17个国家；其中，若干发达国家成为古巴技术的接收方；在已识别的大多数协议中，古巴的机构均作为主要技术持有方和许可方。这些研究结果表明，古巴的国家主导型制药模式已培育出一个充满活力、富有创新力的行业，这对包括巴西在内的其他拥有公共制药实验室的国家具有借鉴意义。

In recent decades, pharmaceutical activities have been characterized by a series of changes related to the pursuit of cost reduction, increased profitability of research and development (R&D) projects, reduction of the internal R&D structure of large companies, and growing outsourcing of technological services ([Alves, 2022](#)).

The growing participation of biotechnological medicines, generally more complex and costly, in sales also emerges as a worldwide phenomenon ([Vargas, 2024](#)).

From these changes, new organizational forms emerged in pharmaceutical activities, marked by the emergence of strategic alliances between agents — who, in some cases, are competitors — which led to the strengthening of cooperation networks that can take various forms, such as consortia, joint ventures, strategic alliances, and subcontracting ([Alves, 2022](#); [Queiroz, 2024](#); [Radaelli, 2008](#)).

Despite this movement, which emphasizes the growth of these partnerships, [Rikap \(2019\)](#) demonstrated that the power asymmetry between the actors in these networks and their different nationalities remains wide. When studying large pharmaceutical companies, all concentrated in developed countries, the author revealed that while universities, public research institutions, and emerging companies associated with these large companies appeared as co-authors in scientific publications, they were practically absent from patent ownership maps, pointing to a relationship of subordination of these institutions to the leading companies.

But although technological generation and ownership remain concentrated in certain institutions, located mainly in the Global North, [Alves \(2022\)](#) highlighted that companies participating in these networks and accessing external sources of knowledge — that is, recipients of technology transfer — should not be considered passive, as this absorption requires a significant volume of prior knowledge and technological capabilities. Although the above characteristics reflect pharmaceutical systems where companies are privately owned and driven by the pursuit of profitability, in Cuba, a country where all companies are state-owned, various types of partnerships are also observed, both between national institutions and with foreign institutions.

In order to understand this universe, this article analyzes the agreements of Cuban institutions in the pharmaceutical sector, based on information available in the Cortellis Generics Intelligence -- Deals module database. (1) The database identified 119,821 agreements involving institutions from 146 countries between 1964 and 2022. For more details, see [Chaves et al. \(2024\)](#). The article presents the main participating institutions by nationality and main activity, as well as therapeutic areas and types of agreements, based on definitions originating from the cited database. 36 agreements involving Cuban institutions, concluded between 1995 and 2020, were identified.

The Cuban experience can provide reflections for the Brazilian case, considering that in both countries there are public laboratories producing medicines, while in most nations such laboratories focus solely on generating new technologies.

Results

The starting point of the analysis refers to the "ownership" of technology. Actors participating in the agreements are classified by the database as "main institution" and "associated institution," with the "main" being the owner of the negotiated asset, acting as licensor, seller, or service provider, and receiving resources or assets from the "associated institution."

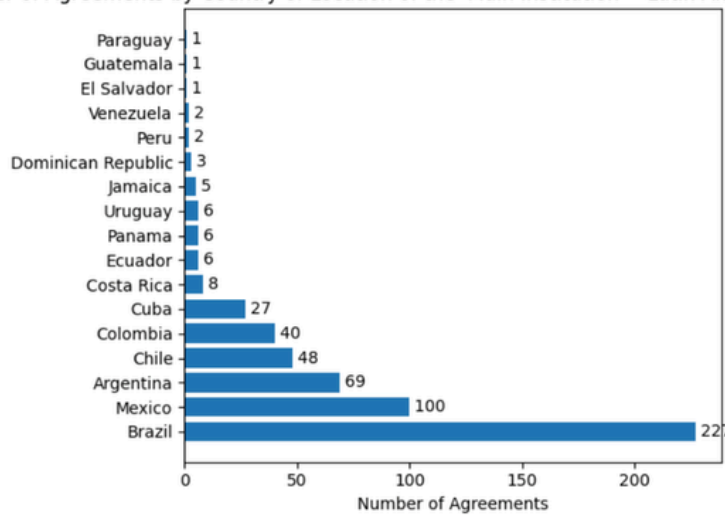
Although the literature indicates that institutions from developed countries are the main owners of technologies, while those from developing countries, with less capacity to generate innovations, are mostly recipients ([Rikap, 2019](#)), in the agreements involving Cuban institutions identified in this work, the opposite was observed: in the majority (27 agreements), Cuban institutions acted as "main" institutes, that is, they were the owners of the asset or technology being marketed. In 13, they acted as "associated" institutions.

Regarding Latin American and Caribbean countries, Cuban participation among "main" institutions, in number of agreements, was higher than that observed in most countries of similar size. Only in those of larger territorial and economic size, such as Brazil, Mexico, Argentina, Chile, and Colombia, were higher numbers of agreements identified. (Graph 1).

(1) Accessed on July 5, 2022.

Graph 1. Number of agreements by country of origin of "main" institution

Number of Agreements by Country of Location of the 'Main Institution' – Latin America and the Caribbean



Source: Cortellis Deals. Own elaboration.

* Includes agreements identified across the entire database.

In terms of number of agreements, three institutions stood out: the [Center for Molecular Immunology \(CIM\)](#), [Finlay Institute](#) and [Center for Genetic Engineering and Biotechnology \(CIGB\)](#). The CIM is a biotechnological institution that directs its basic research, development, and manufacturing of products for the treatment of cancer and other autoimmune diseases, with products registered for health use in 100 countries, export capacity with experience in more than 30 countries, and various joint ventures. The Finlay Institute focuses on the development and production of vaccines, including [Soberana](#) (used against COVID-19). The CIGB is a company of preventive, therapeutic, and diagnostic biopharmaceutical products for the biomedical, agricultural, and industrial sectors; it produces monoclonal antibodies and a wide range of products, including the [Abdala](#) vaccine, also against COVID-19.

All of them are linked to [Biocubafarma](#), a group that brings together Cuban biotechnological and pharmaceutical companies whose activities are specialized by technologies, types of medicines, and/or diseases, which promotes cooperation and limits competition between them (Table 1).

The diversity of countries with which Cuban institutions interact is also a relevant aspect of the analysis. In the 13 agreements in which Cuban institutions appear as "partners," partnerships were made with institutions from eight countries, one of them Brazil. In those where Cuban institutions were the owners of the assets (Cuban institutions as "main"), agreements were made with institutions from 14 other countries, including Brazil. Several developed countries, such as the United States, were recipients of Cuban technologies or assets. In four cases (Table 2), intranational agreements (between two Cuban institutions) were observed.

Table 1: Agreements in the Cuban pharmaceutical sector, by type of institution ("main" and "associated")

Cuban institutions	Main	Associated
Center for Genetic Engineering and Biotechnology (CIGB)	4	2
Centre for BioActive Chemicals	1	
Center for Molecular Immunology (CIM)	15	4
Finlay Institute	5	6
University of Havana	2	
Heber Biotec SA	-	1
Total	27	13

Source: Cortellis Deals. Own elaboration.

Table 2: Number of agreements of Cuban institutions by country of interaction

Countries	Country of partner institution:	Country of main institution:
Argentina	1	-
Brazil	1	1
Canada	5	2
China	3	-
South Korea	1	-
Cuba	4	4
Spain	1	-
USA	2	-
France	2	1
Hungary	-	1
India	1	1
Malaysia	2	1
United Kingdom	1	1
Singapore	1	-
Switzerland	1	-
Thailand	-	1
Vietnam	1	-
Total	27	13

Source: Cortellis Deals. Own elaboration.

Agreements with Brazilian institutions involved the manufacturing and supply of the meningococcal polysaccharide vaccine in African countries by Bio-Manguinhos and the Finlay Institute, and the use of CIM's monoclonal antibody by the company Eurofarma.

Regarding the types of partnerships, 12 categories were identified, grouped based on an adaptation of the

classification presented in Chaves *et al.* (2024): property strategies; R&D activities; manufacturing or supply of medicines; and exclusive patent rights (Table 3). Most agreements (19) concentrated on "R&D activities," specifically in categories related to initial R&D and licenses for the development or marketing of medicines, regardless of whether Cuban institutions acted as main or as partners.

Table 3: Number of agreements of Cuban institutions: by type of institution and by type of agreement

Types of Agreement	Definition	Cuba: main institution	Cuba: partner institution	Total number of agreements with Cuban institutions
Property Strategies	The Main and the Partner establish a joint venture company/subsidiary or the Main sells technology-associated assets to the Partner	5	1	6
R&D Activities	Development and/or commercialization licenses; development services, financing, screening, delivery technology or formulation.	21	11	28
- Drug - Development/Commercialization License	The Partner acquires a license from the Main to develop and commercialize drug(s).	9	2	10
- Drug - Initial Research/Development	The Main and the Partner form an alliance to jointly use knowledge/resources to develop drug candidates.	6	6	9
- Others	Financing, screening, formulation.	7	3	
Manufacturing or supply of medicines	The Main agrees to manufacture or supply drug(s) for the Partner.		1	1
Exclusive patent rights	The Partner acquires an exclusive license to use patent(s) belonging to the Main. Exclusive means that no other company has (or will have) the same rights over the patent(s).	1		1
Total		27	13	36

Source: Cortellis Deals. Own elaboration.

In agreements related to property strategies, especially in the establishment of joint ventures, Cuban institutions stand out among the main ones. These results are similar to those found, for example, in Brazil, where R&D activities and property strategies had greater relevance compared to agreements related to patents or those exclusive for the manufacturing and supply of medicines (Chaves *et al.*, 2024).

Finally, Table 4 presents the therapeutic areas and indications included in the agreements. There is a predominance of treatments for various infections, including neglected diseases such as tuberculosis and the COVID-19 vaccine, and treatments against cancer. Both areas together represented 77.7% of the agreements. In comparison, in Brazil, the diversity of therapeutic areas identified was greater, although infections also predominated as the main area (Chaves *et al.*, 2024).

Limitations

The Cortellis Generics Intelligence -- Deals module database collects and consolidates information on agreements in the pharmaceutical sector worldwide. However, agreements involving institutions from developed countries predominate: the top ten countries in number of agreements are present in 94.4% of the agreements identified (Chaves *et al.*, 2024). Besides the fact that the database does not include all existing agreements between institutions in the pharmaceutical sector (only those that were possible to identify), there is no information on the representativeness of those that were mapped in relation to the total existing in each country.

In the case of the partnership between Cuba and Brazil, the number of agreements presented is underestimated. Therefore, the agreements available in the database are considered a sample of a broader universe, which may be more representative for some countries than for others.

Table 4: Therapeutic areas and indications included in the agreements

Therapeutic area	Indications	Main institution	Partner institution	Total number of agreements
Cancer	Cancer, tumor	11	2	13
Dermatological	Diabetic foot ulcer (Primary); Varicose ulcer	1		1
Diversified	Autoimmune disease; Lymphoma; Psoriasis; Rheumatoid arthritis; T-cell lymphoma	1	2	3
Hematological	Anemia (Primary)	1	1	1
Immune	Vaccination	1		1
Infection	Bacterial infection (Primary); Condyloma (Primary); Coronavirus disease 19 infection (Primary); Dengue virus infection; Hepatitis A and B virus infection; Leptospiraceae infection (Primary); Mycobacterium tuberculosis infection (Primary); Meningitis by <i>Neisseria meningitidis</i> ; <i>Salmonella typhi</i> infection; <i>Streptococcus pneumoniae</i> infection (Primary)	10	8	15
Not identified	-	2		2
Total		27	13	36

Source: Cortellis Deals. Own elaboration.

Despite these limitations, given the scarce information available on technology transfer and other partnerships, the analysis provides, albeit partially, characteristics of the agreements and the institutions involved. Among them, the participation of Cuban institutions as owners of assets or technologies (main institution), the predominance of agreements involving R&D activities, and the emphasis on infectious and neglected diseases stand out.

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