

RESEARCH COMMERCIALIZATION GRANT PROPOSAL

DEVELOPMENT AND COMMERCIALISATION OF HERBAL ANTI-HYPERTENSIVE TEA BLENDS FROM HIBISCUS SABDARIFFA (ZOBO) AND HYPHAENE THEBAICA (GORIBA) FOR HYPERTENSION MANAGEMENT IN NIGERIA

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EXECUTIVE SUMMARY

Hypertension is a major and growing public health challenge in Nigeria, contributing significantly to cardiovascular diseases, stroke, and associated high healthcare costs. Despite the availability of conventional anti-hypertensive drugs, their high cost, side effects, and limited accessibility in rural and semi-urban areas create a substantial barrier to effective hypertension management. There is an urgent need for affordable, safe, and locally sourced alternatives that can complement existing treatment approaches.

Hibiscus sabdariffa (commonly known as Zobo) and *Hyphaene thebaica* (Goriba) are indigenous plants with demonstrated antioxidant and blood pressure-lowering properties in scientific studies. Their widespread availability and long history of traditional use present a unique opportunity to develop evidence-based herbal anti-hypertensive products that are culturally acceptable and economically viable.

The primary objective of this project is to develop, standardize, and commercialise herbal beverage blends from Zobo and Goriba as effective, safe, and affordable products for hypertension management. The commercialisation strategy involves optimizing product formulation, ensuring quality control and regulatory compliance, developing attractive packaging and branding, and establishing distribution channels to reach both local and regional markets. The project will also conduct pilot clinical validation to reinforce product credibility and support market adoption.

Economic and Social Impact: The project is expected to generate multiple benefits for Nigeria's economy. By sourcing raw materials locally, it will stimulate agriculture and create income for farmers. Production, packaging, marketing, and distribution will create employment opportunities, particularly for youth and women in small and medium-sized enterprises. Additionally, by reducing reliance on imported drugs and providing affordable alternatives, the project will conserve foreign exchange and strengthen the local herbal health products industry.

Budget Overview: The total project budget is ₦17,580,000, covering research and product development (₦2,500,000), raw materials procurement (₦2,000,000), equipment and processing (₦4,500,000), quality control and laboratory testing (₦1,200,000), packaging and branding (₦1,200,000), marketing and distribution (₦1,500,000), personnel costs (₦2,500,000), rent and utilities (₦1,200,000), regulatory approvals and certification (₦480,000), and contingency (₦1,000,000). This budget ensures a fully integrated commercialisation process, from product development to market launch.

By combining scientific validation, high-quality production, and strategic commercialisation, this project aims to deliver a locally produced, accessible, and effective herbal anti-hypertensive solution. It has the potential to improve public health outcomes, create economic opportunities, and strengthen Nigeria's position in the growing herbal health market.

Background

Hypertension is a major public health concern in Nigeria, affecting over 30% of adults (World Health Organization [WHO], 2021). This condition significantly increases the risk of cardiovascular diseases, stroke, and other life-threatening complications, contributing to high morbidity and mortality rates (Nigerian Federal Ministry of Health, 2020). Despite the availability of conventional anti-hypertensive medications, access to these treatments remains limited due to high costs, side effects, and inconsistent supply, particularly in rural and semi-urban communities. Affordable, safe, and culturally acceptable alternatives are therefore urgently needed to improve hypertension management and overall public health outcomes (WHO, 2021).

Hibiscus sabdariffa (Zobo) and *Hyphaene thebaica* (Goriba) are indigenous plants widely cultivated across Nigeria. Their local availability offers a unique advantage in reducing raw material costs and minimizing dependency on imported drugs or herbal ingredients (Odugbemi et al., 2019). Scientific studies have demonstrated that these plants possess antioxidant properties and potential hypotensive effects, making them ideal candidates for the development of standardized herbal therapeutic products (Ojeda et al., 2010; Mohan et al., 2017).

Despite the potential benefits, most existing herbal products on the market are unstandardized, lack clinical validation, and are not professionally branded. This creates a substantial market gap for high-quality, evidence-based herbal anti-hypertensive beverages that consumers can trust. By leveraging scientific validation, standardized production, and professional branding, this project aims to fill this gap and provide a credible, affordable, and locally produced alternative for hypertension management in Nigeria (WHO, 2019; Ekor, 2014).

Problem Statement

Hypertension is a major and escalating public health problem in Nigeria, affecting over 30% of the adult population (WHO, 2021). Uncontrolled high blood pressure significantly increases the risk of cardiovascular diseases, stroke, kidney failure, and premature death, placing a heavy burden on individuals, families, and the healthcare system (Nigerian Federal Ministry of Health, 2020). Despite the availability of conventional anti-hypertensive drugs, their high cost, side effects, and limited availability in rural and semi-urban communities hinder effective management.

Although *Hibiscus sabdariffa* (Zobo) and *Hyphaene thebaica* (Goriba) have demonstrated anti-hypertensive and antioxidant properties in scientific studies, these plants are underutilized commercially, and there are very few standardized, clinically validated, or professionally branded herbal products in the Nigerian market. Most existing herbal remedies are unregulated, lack quality control, and do not provide consistent therapeutic benefits, leading to low consumer confidence and limited adoption.

This creates a critical gap in the market for evidence-based, locally produced, safe, and affordable herbal anti-hypertensive beverages. Addressing this gap presents an opportunity not only to improve hypertension management and public health outcomes but also to stimulate the herbal product industry, create employment, and promote sustainable agriculture in Nigeria.

Proposed Solution

To address the need for safe, affordable, and locally produced alternatives for hypertension management, this project proposes the commercialisation of a clinically validated herbal anti-hypertensive tea, combining *Hibiscus sabdariffa* (Zobo) leaves and *Hyphaene thebaica* (Doom palm) fruits. Packaged in convenient tea bags, the formulation allows easy and accurate dosing, making it suitable for home use, hospitals, and wellness centers. Clinical studies, as detailed in our attached publications, have demonstrated the safety and efficacy of this combination in reducing systolic and diastolic blood pressure, providing strong scientific support for its commercialisation.

The project will involve standardizing the formulation to ensure consistent concentrations of bioactive compounds in each tea bag. Processing includes drying, milling, and blending the plant materials in optimal ratios (1:1 to 2:1), followed by packaging into tea bags that preserve the bioactive compounds. Quality control measures such as microbial and chemical testing will be implemented to ensure safety, stability, and compliance with NAFDAC and WHO standards.

Branding and marketing strategies will emphasize the clinical validation, natural composition, and ease of use of the product. Distribution channels will include pharmacies, hospitals, supermarkets, wellness centers, and online platforms to reach both hypertensive patients and health-conscious consumers.

By combining clinical validation with standardized production, attractive packaging, and strategic market entry, this project provides a practical, evidence-based, and culturally acceptable solution

for hypertension management in Nigeria. Additionally, it stimulates local agriculture, generates employment opportunities, and strengthens Nigeria's herbal health product industry, ensuring both public health impact and economic sustainability.

Objectives

The primary objective of this project is to develop and standardize a clinically validated herbal tea from *Hibiscus sabdariffa* (Zobo) and *Hyphaene thebaica* (Doum palm) for hypertension management. The formulation will be optimized to ensure consistent concentrations of bioactive compounds, reliable taste, and maximum efficacy, making it suitable for regular use by hypertensive patients and health-conscious individuals.

A key goal is to ensure the safety and quality of the product by implementing rigorous quality control measures, including microbial and chemical testing, and complying with NAFDAC and WHO herbal product standards. The clinical validation studies conducted support the product's effectiveness and safety, providing a strong foundation for consumer confidence and market acceptance.

Another important objective is to establish scalable production and packaging systems for tea bags, ensuring that the product is easy to use, has a long shelf life, and is ready for market distribution. The project also aims to develop a strong brand identity, emphasizing its natural composition, clinically validated benefits, and convenience, while promoting awareness through pharmacies, hospitals, wellness centers, supermarkets, and online platforms.

Finally, the project seeks to generate economic and social benefits by sourcing raw materials locally, stimulating agricultural production, creating employment opportunities in production and distribution, and strengthening Nigeria's herbal health products industry. Through these objectives, the project combines scientific evidence with commercial viability, ensuring a sustainable and impactful solution for hypertension management in Nigeria.

Expected Benefits to the Nigerian Economy

The commercialisation of the *Hibiscus sabdariffa* and *Hyphaene thebaica* herbal tea bags is expected to deliver significant public health benefits in Nigeria. By providing a safe, clinically validated, and affordable alternative for hypertension management, the product will help reduce the prevalence of uncontrolled high blood pressure, lower the risk of cardiovascular diseases and stroke, and improve overall health outcomes. Its ease of use as a tea bag makes it culturally

acceptable and convenient for daily consumption by patients and health-conscious individuals alike.

Economically, the project will create employment opportunities across multiple sectors, including agriculture, production, packaging, marketing, and distribution. Local sourcing of Zobo and Doum fruits will stimulate the agricultural value chain, supporting farmers and small-scale producers, while promoting sustainable use of indigenous plant resources. The commercialization of a standardized, evidence-based herbal product will also reduce reliance on imported drugs and herbal remedies, conserving foreign exchange and strengthening Nigeria's herbal health products industry.

Furthermore, the project has the potential to enhance consumer confidence in locally produced herbal remedies by combining scientific validation with professional branding and quality assurance. This can position Nigeria as a leader in the development and commercialization of herbal health products, fostering innovation, entrepreneurship, and sustainable economic growth while simultaneously addressing a critical public health challenge.

Commercialization Plan

The commercialization of the *Hibiscus sabdariffa* and *Hyphaene thebaica* herbal tea bags will follow a multi-phase approach designed to ensure market readiness, regulatory compliance, and sustainable growth. The first phase involves product standardization and quality assurance, optimizing the formulation to ensure consistent concentrations of bioactive compounds in each tea bag. Production processes, including drying, milling, blending, and packaging, will be scaled up to meet commercial demand while adhering to strict NAFDAC and WHO herbal product standards. Quality control measures such as microbial, chemical, and stability testing will guarantee safety, efficacy, and shelf-life.

The second phase focuses on branding, marketing, and distribution. A strong brand identity will be developed, highlighting the clinically validated benefits, natural composition, and ease of use of the tea bags. Marketing strategies will include engagement with pharmacies, wellness stores, supermarkets, hospitals, and online platforms to reach hypertensive patients and health-conscious consumers. Promotional campaigns, health awareness initiatives, and product sampling will further support market adoption and consumer trust.

The third phase emphasizes strategic distribution and scaling, leveraging partnerships with local distributors, retailers, and healthcare facilities to ensure product availability across urban and semi-

urban areas. E-commerce platforms and social media channels will supplement traditional retail distribution, expanding reach and consumer engagement. The commercialization plan also includes feedback mechanisms to refine packaging, product formats, and marketing strategies based on consumer preferences and market demand.

Finally, the project seeks to generate economic and social impact by stimulating local agriculture through the sourcing of Zobo and Doum fruits, creating employment opportunities in production, packaging, and marketing, and strengthening Nigeria's herbal health products industry. By combining clinical validation, professional branding, scalable production, and strategic market entry, this commercialization plan ensures that the Hibiscus-Doum tea bags provide a practical, evidence-based solution for hypertension management while contributing to sustainable economic growth and public health improvement in Nigeria.



Figure 1: The Solution



Figure 2: Packaged Tea-Bags

Target Market

The primary target market for the Hibiscus sabdariffa and Hyphaene thebaica herbal tea bags includes adults diagnosed with hypertension across urban and semi-urban areas in Nigeria, particularly those seeking safe, affordable, and natural alternatives or complements to conventional anti-hypertensive medications. Secondary targets include health-conscious individuals who consume herbal teas for preventive cardiovascular health, wellness enthusiasts, and consumers interested in natural remedies backed by clinical validation.

Distribution and sales will initially focus on pharmacies, hospitals, wellness centers, and herbal stores, where hypertensive patients are likely to seek trusted products. Additionally, the project will leverage online platforms and e-commerce marketplaces to reach a wider audience, including tech-savvy urban consumers and Nigerians living abroad interested in locally sourced herbal products.

The market also includes corporate wellness programs, hotels, and health-focused cafes, which increasingly incorporate herbal teas into their offerings. By combining clinical evidence, convenience in a tea bag format, and professional branding, the product is positioned to capture both the medicinal and lifestyle segments of the herbal tea market, ensuring broad adoption and sustainable commercial growth.

Marketing Strategy & Sales Approach

The marketing strategy for the Hibiscus sabdariffa and Hyphaene thebaica herbal tea bags is designed to maximize consumer awareness, credibility, and adoption across Nigeria. The strategy leverages the product's clinically validated efficacy, natural composition, and convenient tea bag format to differentiate it from unstandardized herbal remedies in the market. Branding and packaging will emphasize health benefits, ease of use, and quality assurance, appealing to hypertensive patients, health-conscious consumers, and institutions such as hospitals and wellness centers.

The sales approach will utilize a multi-channel distribution strategy. Traditional retail channels will include pharmacies, supermarkets, herbal shops, wellness centers, and hospitals, ensuring accessibility in both urban and semi-urban areas. Complementing this, digital marketing and e-commerce platforms will target tech-savvy consumers and allow for direct-to-consumer sales nationwide, including delivery services for remote regions. Social media campaigns, health

awareness initiatives, and collaborations with healthcare professionals will further build credibility and encourage adoption.

The project will also implement institutional and corporate partnerships, targeting hospitals, clinics, corporate wellness programs, and health-focused cafes. Bulk supply agreements with these institutions will provide consistent revenue streams while increasing product visibility and credibility. Promotional activities will include sampling events, health talks, and demonstration sessions highlighting the preparation and benefits of the tea bags.

By combining evidence-based claims, professional branding, strategic retail placement, and digital marketing, the project aims to capture both medicinal and lifestyle segments of the herbal tea market. This approach ensures broad consumer reach, sustainable sales growth, and long-term commercial success, while simultaneously promoting improved hypertension management and public health awareness in Nigeria.

Project Timeline

Activity	Description	Timeline (Months)
Company Registration & Legal Setup	Incorporate business entity, register with Corporate Affairs Commission (CAC), obtain Tax Identification Number (TIN)	1
Product Standardization & Formulation	Optimize drying, milling, blending, and tea bag preparation; establish standardized ratios and active compound consistency	1–2
Quality Control & Laboratory Testing	Conduct microbial, chemical, and stability testing; ensure compliance with NAFDAC, SON, and WHO herbal product standards	2–3
Regulatory Approvals	Submit product for NAFDAC registration; obtain SON certification and other necessary permits	2–4

Clinical Validation Review	Compile and review data from prior clinical studies to reinforce product efficacy and safety claims	3–4
Pilot Production	Produce initial batch of standardized tea bags for market testing and distribution	4–5
Branding & Packaging Design	Develop professional packaging, labeling, and brand identity emphasizing clinical validation and natural composition	5–6
Marketing & Promotional Activities	Launch awareness campaigns, sampling events, social media marketing, and institutional outreach	6–8
Distribution Setup	Establish partnerships with pharmacies, supermarkets, hospitals, wellness centers, and online platforms	7–9
Market Launch	Roll out tea bags to selected retail and institutional partners; monitor consumer feedback	9–10
Scaling Production	Expand production capacity based on demand; optimize supply chain and logistics	10–12
Monitoring & Evaluation	Assess sales performance, consumer feedback, and operational efficiency; implement improvements	11–12

Budget and Justification

Budget Item	Description / Purpose	Estimated Cost (₦)
1. Product Development	Formulation optimization, lab testing, stability studies, clinical validation	2,500,000
2. Raw Materials Procurement	Hibiscus sabdariffa calyces, Hyphaene thebaica fruits, packaging materials	2,000,000
3. Equipment & Processing	Herbal tea processing machines, drying equipment, grinders, sterilization units	4,500,000
4. Quality Control & Laboratory Testing	Microbial tests, chemical analysis, blood pressure monitoring equipment	1,200,000
5. Packaging & Branding	Bottles, labels, cartons, logo design, branding materials	1,200,000
6. Marketing & Distribution	Launch events, promotional campaigns, digital marketing, sample distribution	1,500,000
7. Personnel Costs (Staff Salaries)	Salaries for research assistants, production staff, marketing team	2,500,000
8. Rent & Utilities	Office and processing space rent, electricity, water, internet	1,200,000
9. Regulatory Approvals & Certification	NAFDAC and SON registration, herbal product certification	480,000
10. Contingency (≈5%)	Unexpected costs, price fluctuations, additional logistics	1,000,000
Total Estimated Budget		17,580,000

Budget Justification

1. **Product Development (₦2,500,000):** To optimize the formulation, conduct laboratory testing, ensure stability, and validate clinical efficacy of the herbal blends.
2. **Raw Materials (₦2,000,000):** Procurement of high-quality Hibiscus sabdariffa and Hyphaene thebaica for pilot production and clinical testing.

3. **Equipment & Processing (₦4,500,000):** Purchase and installation of processing machines necessary for drying, grinding, and packaging herbal products at scale.
4. **Quality Control & Laboratory Testing (₦1,200,000):** Ensures product safety, efficacy, and compliance with regulatory standards.
5. **Packaging & Branding (₦1,200,000):** Professional packaging, labeling, and branding to ensure market appeal and consumer trust.
6. **Marketing & Distribution (₦1,500,000):** Launch events, promotional campaigns, and initial distribution to create awareness and attract customers.
7. **Personnel Costs (₦2,500,000):** Salaries for skilled staff managing production, research, and marketing operations.
8. **Rent & Utilities (₦1,200,000):** Office and processing facility rental, electricity, water, and internet services for smooth operations.
9. **Regulatory Approvals (₦480,000):** Mandatory registration and certification to ensure legal compliance and market entry.
10. **Contingency (₦1,000,000):** Covers unforeseen expenses and price fluctuations during production and commercialization.

Team Members

Name	Role / Title	Qualifications Affiliation	/ Key Responsibilities
Dr. Adamu Dalhatu	Principal Investigator	Associate Professor, Bayero University Kano, Department of Nursing Science	Overall project oversight, research leadership, methodology guidance, supervision of team members
Amina Suleiman Rajah	Project Co-ordinator	RN, RM, RNE, RBPB, BNSc, PGDE, MSc,	Clinical expertise, nursing insights. Coordinator of the project.

		PhD (in view) – Bayero University Kano	
Dr. Abdulmaleek Musa Aliyu	Product Validation	Associate Professor, Bayero University Kano, Department of Nursing Science	Lab work, product development
Dr. Muazu Muazu	Marketing/Commercialization	MBA- Dangote Business School	Marketing strategy, commercialization oversight, operations management]

Monitoring and Evaluation

The success of the Hibiscus sabdariffa and Hyphaene thebaica herbal tea bag project will be monitored and evaluated through a structured framework to ensure **product quality, commercial performance, and public health impact**.

1. Product Quality Monitoring:

Regular quality checks will be conducted throughout the production process, including verification of bioactive compound concentrations, microbial and chemical testing, and shelf-life assessments. Each batch of tea bags will be evaluated against **NAFDAC and WHO herbal product standards** to ensure consistency, safety, and efficacy. Any deviations from the established standards will be addressed immediately to maintain high product quality.

2. Commercial Performance Evaluation:

Sales, distribution, and market penetration will be tracked using metrics such as the number of units sold, geographic reach, and consumer feedback. Partnerships with pharmacies, wellness centers, hospitals, and online platforms will be assessed to evaluate the effectiveness of distribution channels. Marketing campaigns and promotional activities will be monitored for engagement, reach, and conversion rates, enabling adjustments to optimize product uptake.

3. Public Health Impact Assessment:

Consumer surveys and follow-up studies will be conducted to assess the perceived effectiveness of the tea bags in managing hypertension. Feedback on convenience, taste, and health benefits will be collected to inform product improvement and confirm clinical relevance in real-world use.

4. Reporting and Continuous Improvement:

M&E activities will be documented and reported monthly to project management. Lessons learned, challenges, and consumer insights will be incorporated into ongoing production, marketing, and distribution strategies. Key performance indicators (KPIs) will include product quality compliance, sales growth, market expansion, and consumer satisfaction.

This comprehensive M&E framework ensures that the project remains **scientifically credible, commercially viable, and socially impactful**, providing a reliable and evidence-based herbal solution for hypertension management while supporting sustainable business growth.

Conclusion

The commercialization of the *Hibiscus sabdariffa* (Zobo) and *Hyphaene thebaica* (Doum palm) herbal tea bags represents a strategic and innovative solution to the growing burden of hypertension in Nigeria. Clinically validated, safe, and conveniently packaged, the tea bags provide an evidence-based alternative for hypertension management that is accessible, culturally acceptable, and affordable.

Beyond health benefits, this project offers significant economic and social impact. By sourcing raw materials locally, it supports farmers and stimulates agricultural production. Production, packaging, marketing, and distribution create employment opportunities and strengthen Nigeria's herbal health products industry. The project also reduces reliance on imported remedies, conserves foreign exchange, and positions locally produced herbal products as credible and market-ready.

With a robust commercialization strategy, quality assurance framework, and monitoring and evaluation system, this project is poised for sustainable growth and wide-scale adoption, addressing a critical public health need while fostering entrepreneurship, innovation, and economic development. Funding support from NASENI will enable the successful implementation of this project, ensuring that the Hibiscus-Doum tea bags reach the market effectively and deliver tangible health and economic benefits to Nigerians.

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