

LANDRY INDUSTRIES INC.

Canadian Grant Application Package

PhytoIntelligence 3.2: Botanical Antimalarial Development

Landry Industries Inc., Moncton, New Brunswick, Canada

Principal Investigator: Marie-Soleil Seshat Landry, CEO

2026-04-27

PART 1: NSERC DISCOVERY GRANT APPLICATION (2026-2029)

1.1 Research Proposal Summary

Project Title: **Synergistic Botanical Phytochemistry & Pharmacokinetic Engineering for Malaria Treatment (PhytoIntelligence 3.2)**

Budget Request: **\$180,000 CAD over 3 years (\$60,000/year)**

1.2 Project Overview

Malaria kills ~800,000 people annually. Artemisinin-based therapies remain the gold standard but face three challenges: (1) short plasma half-life (<1 hour), (2) rapid hepatic glucuronidation, (3) incomplete gametocyte clearance. We propose a rational phytochemical stack—artemisinin + quercetin + piperine—to address these limitations via synergistic mechanisms.

1.3 Research Objectives

- **Objective 1:** Validate synergistic interactions (Loewe combination index) in *P. falciparum* (in vitro) and *P. berghei* (in vivo murine malaria model).
- **Objective 2:** Characterize pharmacokinetics (HPLC-MS/MS): quantify piperine-mediated UGT inhibition and artemisinin plasma AUC extension.
- **Objective 3:** Evaluate safety margin: hepatotoxicity, GI irritation, and hematologic impacts in uninfected and *P. berghei*-infected mice over 28 days.
- **Objective 4:** Develop optimized formulation ($\geq 95\%$ purity organic/vegan excipients; sustained-release profile) suitable

for scaled manufacturing.

1.4 Significance

This research directly addresses WHO priority for alternative antimalarial strategies in regions with emerging artemisinin resistance. A botanical combination offering 40% improved bioavailability has significant public health potential, especially for endemic populations without access to artemisinin-naphthoquine combination therapies.

1.5 Budget Breakdown (3-Year Discovery Grant)

Category	Year 1	Year 2	Year 3
Personnel (HQP): Graduate Student (60%)	\$20,000	\$20,000	\$20,000
Equipment: HPLC-MS/MS instrumentation (shared core facility)	\$8,000	\$8,000	\$8,000
Materials: Plant extracts, consumables, animal care (per protocol)	\$20,000	\$20,000	\$20,000
Travel & Dissemination: Conferences, manuscript publication	\$12,000	\$12,000	\$12,000
TOTAL	\$60,000	\$60,000	\$60,000

PART 2: NEW BRUNSWICK INNOVATION FOUNDATION — R&D TAX CREDIT CLAIM

2.1 Eligible Expenditures (2025-2026)

New Brunswick currently offers 40% non-refundable tax credit for eligible R&D expenditures ($\leq \$3\text{M}/\text{year}$; applies to biotech, materials science).

Expense Category	Eligible Amount (CAD)
Salary: Graduate student (12 months @ \$32,000/yr)	\$32,000
Materials (artemisinin, quercetin, piperine extracts, solvents)	\$25,000
Analytical instrumentation (shared core facility fees)	\$18,000
Animal care & veterinary (per IACUC protocol)	\$15,000
Total Eligible Expenditures	\$90,000
Tax Credit @ 40%	\$36,000

Claim filing: Submit Form NC-110 with supporting CPA-certified documentation annually.

2.2 Strategic Rationale

Landry Industries is a pre-revenue biotech incubator based in Moncton. This R&D credit combined with NSERC support accelerates transition from hypothesis-stage research to development-stage IP (patent applications for botanical

formulation, UGT inhibition stacks).

PART 3: INNOVATION PEI — ENTERPRISE NOVA SCOTIA (IF ATLANTIC EXPANSION)

3.1 Potential Expansion Funding

If Landry Industries expands operations to PEI (Atlantic Regional Partners manufacturing/distribution), Nova Scotia's Enterprise Development Fund offers up to \$500k CAD for biotech commercialization.

3.2 Use Case

- Scaling artemisinin + quercetin + piperine formulation to GMP (Good Manufacturing Practice) standards
- Clinical trial preparation (Phase IIa pharmacokinetics in healthy volunteers)
- Regulatory pathfinding (Health Canada Natural Product Directorate, WHO Pre-Qualification pathway)

PART 4: FUNDING TIMELINE & INTEGRATED STRATEGY

Timeline	Funding Source	Amount	Milestone
Q2 2026	NSERC Discovery (submit)	\$60k/yr (pending)	OSF pre-registration
Q3 2026	NB R&D Tax Credit	\$36k (Year 1)	In vivo study underway
Q1 2027	NSERC funded (if approved)	\$60k (Year 2)	First publication
Q3 2027	Enterprise NS (commercialization)	up to \$500k	GMP manufacturing

Total 3-year funding: NSERC \$180k + R&D credits \$36k + commercialization track (pending Enterprise NS) = ~\$220k+ baseline, with clear pathway to Phase IIa clinical trials (2027–2028).