Analyzing the Optimal Treatment for Malaria Using the *Artemisia annua* 

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**Abstract**

Malaria is a parasitic disease impacting 3 billion people worldwide. The *Plasmodium falciparum* is drug resistant to 90% of antimalarial compounds. Artemisinin is being used in a variety of forms to treat Malaria, and the best way is in edible tablets created from organic *Artemisia annua*.

**Description of Treatments**

- **ACT**= Artemisinin Combination Therapy, produced in bacterial plasmids or extracted from *A. annua*, combined with other antimalarials
- **pACT**= Organic *A. annua*, edible tablet created from plant leaves
- **Transgenic**= Metabolically engineered *A. annua*, also edible tablet created from plant leaves

**Analysis of Treatments**

- **Antimalarial Resistance**: ACT resistance rapidly compared to pACT
- **Production**: Production occurs in developing country
- **WHO Approval**: WHO approves ACTs
- **Cost**: $0.10
- **Resistance**: The parasite is drug resistant to 90% of antimalarials

**Results and Discussion**

- **pACT**= best treatment option
- Clonally propagated yields 1.4% Artemisinin content consistently
- Least likely for drug resistance
- Already accepted in developing countries
- $0.10-$0.30 / treatment
- Production occurs in developing country
- Method shown below

**Measures for Attribution**

Analyze mortality rates and incidence rates of malaria recorded by the WHO. Analyze the economic impact on a country based on GDP. Analyze if socially acceptable by people by studying compliance.

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**Why Malaria?**

- Endangers 3 billion people worldwide
- 90% cases in Africa
- 10% reduction of GDP

**Project Goals/Objectives**

Determine the ideal treatment for malaria derived from the *A. annua* by analyzing the benefits and costs of ACTs, pACT and transgenic *A. annua*.

**Artemisia annua**

Glandular trichomes

Artemisinin is produced in the glandular trichomes of the *A. annua*.

**Economic Feasibility**

- **Production Method**: Dried, Ground, Sieved, Compressed
- **Cost**: $0.10-$0.30 / treatment
- **Location**: Production is costly and nondomestic

**References**
