TECHNICAL ASPECTS

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SUBJECT COVERED

• BRIEDING
• ARTEMISIA PRODUCTION
• SEED SUPPLY
• ARTEMISININ EXTRACTION, PURIFICATION
• ARTEMISIN ANALYSIS
• DERIVATISATION
• ARTEMISIA PRODUCTION
PLANT BRIEDING

• biblio: Présentation NIAB
  Présentation York

• Question: Cost of seeds and Availability
  – The cost is not already know
  – The purpose is to have the seeds available at the best cost
  – The York seeds will be available in 2012 (mid)
  – The first seeds will be available for trails in 2011
PLANT BRIEDING

• reference: NIAB presentation
  CNAP presentation

• Question: Where are the company who are going to produce the seeds adapted to each region:
  – They are current trials in China, India, Kenya, Madagascar and China to develop the right varieties for each place.
  – Contact have been taken with different companies for seed production
  – The seed production of the varieties for Africa can be done in India without any problem.
PLANT BREEDING

• reference: NIAB presentation
  CNAP presentation

• Question: Metabolite profile
  – It seems that the same variety can have very different metabolite profile depending of the cultivation conditions.
PRIMARY EXTRACTION

• reference: NIAB presentation

The primary extract obtain by solvent extraction (Hexane, Ethanol, Toluene) contain 10 to 15% Artemisinin and 85 to 90% impurities.

• How to reduce the impurities of the primary extract:
  – By liquid/Liquid extraction (2-3 hours)
  – Ultrasonic (less time, more pure extract)
  – By HFC extraction
PURIFICATION

HFC PURIFICATION:

– The extract obtain by HFC purification of Solvent extracts (Hexane, Toluene..) contain:
  • 70% Mother liquor
  • 30% Crude Crystals

– The issues of the process are:
  • The recovery of Artemisinin in Mother liquor
  • The solvent loses (green house gas)
ANALYTIC

• The UV measurement is not correct for non pure artemisinin

• Bhupinder Khambay makes the suggestion that the Pharmacopeia should consider the evolution of the new developments in HPLC techniques to propose the method.

• Considering that every stakeholder has its own references and methods, the proposed analytical techniques and specs should appear as broad guidelines better than narrow specifications.

• Regarding impurities, we should have a deeper watch on impacts on API processes

• Derivatives

• Some interesting thoughts has been pointed on the lack of interest of some derivatives such as Artemisone or Artemiside on their potential benefits on resistance

• A better understanding is needed on artemisinin derivatives and their effects on activity or artemisinin. (metabolic pathways...