



Meeting Minutes

WP5 - WP Meeting

Date: 25-Apr-2017
Time: 13:30-14:30
Location: Axis X, WFBR

Participants

<i>Name</i>	<i>Company/Institute</i>
Jelle van Leeuwen	WFBR
Ana Lopez Contreras	WFBR
Jaap van Hal	ECN

Agenda

1. Side stream valorization
2. Upscaling
3. Book chapter

Minutes of meeting

1. Valorisation of residual streams
 - Tasks
 - o WFBR is responsible for protein valorization of side streams, ECN covers minerals with assistance of WFBR.
 - o ECN is developing chromatographic protein analysis methods, which will be validated in WP5.
 - Phases to be analysed for proteins and minerals (WP3):
 - o Fresh biomass (SAMS)
 - o Solid residue after pretreatment (WFBR WP2)
 - o Residue after anaerobic digestion (SAMS)
 - o Liquid after pretreatment (WFBR WP2)
 - o Secondary phase after purification/concentration (WFBR, ECN)
 - o Solid residue after (ABE-)fermentation (WFBR WP3, DTI)
 - o Liquid after (ABE-)fermentation (WFBR WP3, DTI)
 - o Liquid after ABE/ethanol stripping (WFBR WP3, DTI)
 - Phases to be analysed for proteins and minerals (WP4)



- Fresh biomass (SAMS)
 - Solid phase after conversion (ECN)
 - Liquid phase after conversion (ECN)
- Content analysis of streams to be determined in the workpackage that produces the stream, valorisation strategy to be done in WP5

- 2. Upscaling
 - After determining the initial processing scheme for the upscale production of fuel from *Saccharina latissima*, a similar process will be applied to other brown, red and green species
 - Brown: Alaria (highly similar to *S. latissima*), Fucus
 - Red: Palmaria or Gracilaria
 - Green: Ulva
 - These experiments will be performed at a scale which will represent upscaling (<10L)
 - Membrane purification/concentration
 - 90% selective (with standard solution KCl/mannitol)
 - ~150 l/h
 - Smallest repeating membrane unit available
 - ~20 bar
 - Smaller membrane surfaces should be representative for upscaling
 - Dick Meyer contact for information. 0885158155. meyer@ecn.nl
 - Andre Wortel alternative 4883 wortel@ecn.nl
 - Upscaling
 - Produce 3 streams (ABE / Ethanol / Backup)
 - Enzymatic, vast/vloeibaar
 - Centrifuge Evodos 10 (fed-batch solid removal) or 25 (continuous solid discharge)
 - 100-150 L/uur
 - Centrifuge at AlgaePARC Evodos 25 – throughput 1-4 m³/h. Exclusively used for microalgae. Applicability relies on viscosity after hydrolysis, to be determined experimentally.
 - Jaap will make a schematic representation of the upscaled process

- 3. Book chapter
 - SAMS is responsible for first iteration sugar analysis
 - WFBR responsible for protein chapter



Noted by Jelle van Leeuwen, revised by ...