Purification of volatile fatty acids (VFA) produced from acidogenic fermentation of lignocellulosic compounds

Step 1 : Concentration of VFA such as acetic, propionic, butyric and lactic acids from acidogenic fermentation broth by using electromembrane techniques combined with ionic exchange resins.

Step 2 : Separation of concentrated volatile fatty acids by using resins (reverse phase, HIC or ionic exchange).

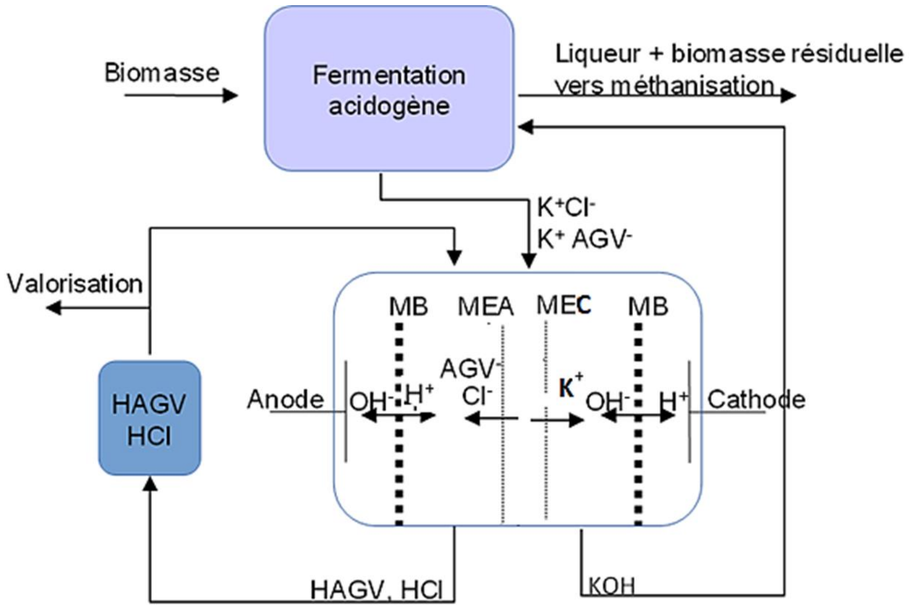

Figure n°1 : Step 1 – electromembrane techniques in a loop on the fermentation vessel

Feed is « fermentation liquor » which contains salts of VFA, proteins, polysaccharides and inorganic salts.
VFA anions migrate to the positive anode through the anionic exchange membrane.
Potassium cations migrate to the negative cathode through the cationic exchange membrane.
VFA acids could be concentrated on resins to increase the conductance of the system.
Separation of the VFA from each other could be done by preparative chromatography.
The alcaline residues (potassium hydroxyde) should be reused to regulate the pH of the acidogenic fermentation.

This is only a proposal not yet validated on a technical point of view.
We are looking for potential partners in order to submit this project at a European level.

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