Reactive Deep Eutectic Solvents (RDESs): a new tool for Phospholipase D-catalyzed preparation of polar head modified phospholids

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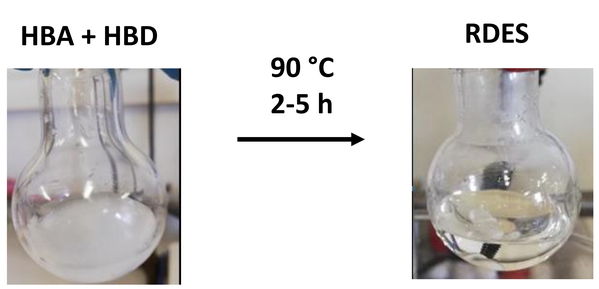
ABSTRACT

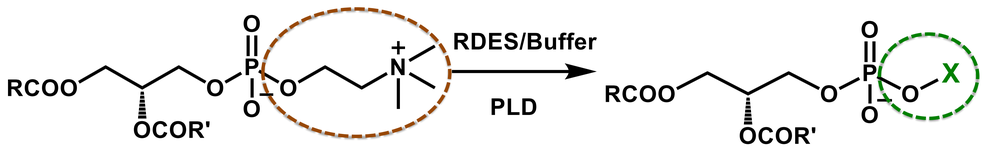
Natural phosphatidylcholine (PC) has been submitted to PLD-catalyzed transphosphatidylation using a new reaction medium composed by a mixture of RDES/buffer. Instead of exploiting deep eutectic solvents conventionally, just as the reaction media, these solvents have been designed here in order to contribute actively to the synthetic processes by participating as reagents. Specifically designed RDES/buffer reaction media allowed the obtainment of polar-head modified phospholipids with optimized yields in the perspective of a sustainable process implementation.

RDESs PREPARATION

Hydrogen-bond acceptors (HBAs)	Hydrogen-bond donors (HBDs=XOH)
Choline chloride	Glycerol
Trimethyl glycine	Ethylene glycol



ENZYMATIC TRANSPHOSPHATIDYLATION



PC

P-OX
X_1-OH: glycerol
X_2-OH: ethylene glycol

PRODUCTS CHARACTERIZATION

- ^{1}H NMR
- ^{31}P NMR
- ESI/MS
- GC/MS
- HPLC

CONCLUSIONS

- RDESs work both as solvent and as reagent.
- High yields of PC conversion into polar-head modified phospholipids.
- Inhibition of the parasitic competitive hydrolysis of PC.
- Easy product recovery and purification.

HERE YOU CAN FIND OUR PUBLISHED PAPER:

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