

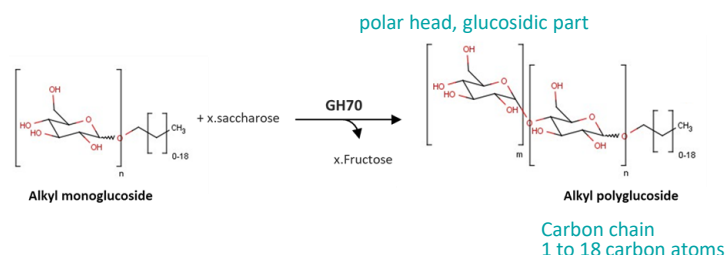
Preparation process of alkylpolyglucosides by enzymatic elongation of the glucosidic head of commercial APG

PATENT FR2007021



BIOPROCESSES - WHITE BIOTECHNOLOGIES - ENVIRONMENT

TEAMS:



Description of the invention

For reasons of reaction kinetics and low solubility of sugars in fatty alcohols, the **average degree of polymerization of commercial APGs is always less than 2** (classically between 1.3 and 1.6). However, the elongation of the osidic head of the APG makes it possible to modify their properties, in particular the hydrophilic/lipophilic balance (HLB) or the solubility.

Some recently identified enzymes have shown an exceptional ability to recognize and lengthen the glucosidic head of commercial APGs in the presence of sucrose. The average degree of polymerization of the carbohydrate part can be controlled between **2 and 20 glucosyl units**, as well as the content of α -1,6, α -1,4 and/or α -1,3 bonds. The resulting **HLBs** then vary between **17.5 and 19.2** against 11 for the monoglucosylated commercial product.

ADVANTAGES

- Develop the production of new ranges of excipients or cosmetic ingredients with HLB>14, between 17 and 19) that cannot be obtained chemically (HLB around 11 for commercial APGs)
- Possibility to control the DP of the carbohydrate part
- Obtaining surfactants of variable structures/sizes with different types of bonds and degree of branching

KEYWORDS: alkyl polyglucoside, biobased surfactants, surfactants, HLB, glucosyle

APPLICATIONS

This process makes it possible to produce enzymatically APGs of different chain lengths for applications:

- Cosmetics, detergents, agrifood, health chemicals industries: emulsifiers market (HLB value 8 to 18); detergent (HLB 8 to 15); solubilizer (HLB 15 to 18) for the fields of cosmetics (care cream, anti-aging cream, etc.), hygiene products (shampoo, liquid soap, etc.) or even the household detergents sector (laundry, soaps, etc.).
- Biosurfactants: substitution of surfactants of petroleum origin by biosourced, biodegradable, synthetic products by green ways



PARTNERSHIP / LICENSING

Collaboration / License on patent or license option agreement with an R&D validation program

TRL 1 2 3 4 5 6 7 8 9

STAGE OF DEVELOPMENT: Research teams have successfully validated the proof of concept. They offer now license option agreement to an industrial partner in order to test batches of surfactants produced under industrial conditions specific to a field of activity. This invention is the subject of a patent application FR2007021.

Chief Scientist

Etienne SEVERAC (UMR 792 TBI)
Email : e_severa@insa-toulouse.fr

Implementation Officer

Stéphanie LEMAIRE
Tel : +33 6 24 03 86 53 • Email: stephanie.lemaire@inrae.fr