



Sunho Biodiesel Corporation

10F-6 380 Linsen N. Rd., Taipei

Taiwan 104, R.O.C.

Tel: (02)2563-2720 Fax: (02)2543-1603

E-mail : info@sunhobiodiesel.com

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FOR IMMEDIATE RELEASE

Lipid-based Biorefinery on the Horizon

Sunho Biodiesel Corporation introduces a new process for monoglyceride production

Taipei –Sunho Biodiesel Corporation (SBC) has developed a new, enzymatic process for exclusive production of pure monoglycerides. The product can be a mixture of different types of monoglycerides or a neat product consisting of only one type of monoglyceride (PCT patent application filed). A broad array of biobased materials sourced from sugar has been coming up as interest in the field is renewed, mainly brought about by the expanded applications of basic raw materials like sugar, oil and protein. Unlike most sugar-based technologies, which are usually rooted in fermentation processes and has its associated set of challenges, SBC's new lipid-based technology utilizes enzymatic transesterification, esterification and glycerolysis to produce up to 100% yield.

Monoglyceride is a valuable emulsifier, preservative and additive in food, cosmetics and pharmaceuticals. It is completely safe and has a GRAS status given by the FDA. It contains a hydrophobic lipid-based component and a hydrophilic glycerol-based component. As such, it has been thought to be a viable raw material for drug delivery vehicles. Its structure, which may contain a number of functional groups, also lends it to various synthetic purposes. Recently, a report by Germany-based Ceresana Research indicated increased global market for bioplastics, including biobased materials such as polyurethane. Monoglycerides have been known to be useful for the synthesis of polymers, chemicals, fine chemicals, phospholipids, glycolipids and lipoproteins. However, its high cost and low industrial yield limit its applications in large-scale industries.

Current monoglyceride manufacturing often produce low yield or a mixture with diglycerides and triglycerides. Crude products are then purified by molecular distillation, which is an expensive industrial process. Monoglyceride production is further hampered by uncontrolled polymerization of unsaturated types due to high reaction temperatures. In pure form, unsaturated monoglycerides can be especially important raw materials for biobased polymers. In short, a high yield, high purity and versatile monoglyceride production is not feasible under the current chemical approach. The conventional chemical process typically involves fatty acid and glycerol as reactants, both costly raw materials. An alternative is to use fatty acid alkyl ester, which is an energy source that can be derived from renewable oil.

In the past, researchers focused on harnessing energy from renewable oil efficiently. The two most common problems encountered were the high cost of producing biodiesel and the low purity of glycerol co-product. Hence, the economics of the biodiesel industry has always been unstable,

reliant on the smallest changes in crude petroleum oil prices, government policies, natural disasters, etc. Another obstacle with using renewable oil to replace petroleum oil is the lack of technology to convert it into biobased raw materials. The technological gap further lessened the value of lipid-based approaches since it did not have the potential for broader applications.

Now, however, SBC believes it has bridged the technological gaps that will help form a lipid-based biorefinery. At present, the company has a complete set of lipid-based technologies that include oil extraction, oil degumming and transesterification (ET Process[®]). The newly developed MG Process technology can produce monoglyceride in high yield and high purity. Because room temperature is used, unsaturated monoglycerides can also be easily produced. SBC's new monoglyceride technology serves to enrich and increase profitability of business because it can yield many high value-added products. This is the first of its kind that produces high value monoglyceride products based on an enzymatic process.

All the patented technologies developed by SBC are based on a waste-free and cost- and energy-efficient concept. The idea is to enable each locality to independently choose its own feedstock to convert into energy and valuable materials. Company CEO Dr. George Chou remarks, "Our goal is to help global transition into working, efficient, clean and profitable biofuel and biobased materials industries. We believe it is time to build a sustainable society for our next generation. A lipid-based biorefinery can be an attractive option." SBC has recently been included in the shortlist of nominees for Green Shoots Award of the 2012 Sustainable Biofuels Award.

Currently, the company is looking for partners to set up a demonstration facility. Interested parties may visit the company website at www.sunhobiodiesel.com or get in touch at info@sunhobiodiesel.com.

About SBC

Sunho Biodiesel Corporation is an R&D-based company that was established in 2004 but has been rooted in the industry since 1987. It is always committed to the promotion of sustainable biofuels and biobased materials for the next generation. Aside from biodiesel production plants services, the company also possesses technologies related to oil degumming, oil extraction and monoglyceride production. The company is open to interested parties for profit-oriented or private-public partnerships. To know more, visit www.sunhobiodiesel.com.

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Contact:

Sunho Biodiesel Corporation
10F-6 380 Linsen North Rd.
Taipei, 104 Taiwan
Telefax: 886-2-25431603
Mondays-Fridays (8 am – 5:30 pm)
E-mail: info@sunhobiodiesel.com