



Green Mussel extract (GMe) goes commercial

First nutraceutical produced by an ICAR Institute

Green Mussel extract (Cadamin™ GMe) contains 100% natural marine bioactive anti-inflammatory ingredients extracted from green mussel *Perna viridis* (Indian Patent Application No. 2065-2066/CHE/2010). The product is effective to combat arthritic pain and inflammatory diseases in human beings, and is an effective green alternative to synthetic non steroidal anti-inflammatory drugs and other products available in the market. Consuming Cadamin™ GMe will avoid unfortunate side effect of these synthetic non steroidal anti-inflammatory drugs (NSAIDs). The active principles in Cadamin™ GMe isolated from *P. viridis* were found to competitively inhibit inflammatory cyclooxygenases - II (COX II) and lipoxygenase - V (LOX V) in an inflammation and oxidative stress reaction, resulting in decreased production of pro-inflammatory prostaglandins and leukotrienes, and its activity was found to be superior than synthetic non steroidal anti-inflammatory drugs available in the market. The active principles isolated from *P. viridis* and concentrated in the product registered higher inflammatory COX II and LOX V inhibition (70-75%) than synthetic NSAIDs such as aspirin and indomethacin (55-66%) at a comparable dose. *In vivo* animal model studies revealed that the active principles effectively suppressed (64 - 77%, 2-4h) the edema produced by histamine, which indicate that they exhibit anti-inflammatory action by means of either inhibiting the synthesis, release or action of inflammatory mediators.

Green Mussel extract (Cadamin™ GMe) developed by CMFRI during 2010 was commercialized on 5th October 2012 with

Central Marine Fisheries Research Institute's
Cadamin™ Green Mussel Extract (GMe)
A holistic health solution from nature



An effective green alternative to synthetic non steroidal antiinflammatory drugs containing 100% natural, marine, bioactive antiinflammatory principles extracted from green mussel



Accelerated Freeze Drying Company Pvt. Ltd., a FDA, ISO 22000 FSSC 22000:2011 certified flag Ship Company of Amalgam Group of Companies. This is the first nutraceutical produced by an ICAR institute. The MoU was signed by Dr. A. J. Tharakan, Chairman, Accelerated Freeze Drying Company Pvt. Ltd. and Dr. G. Syda Rao, Director, Central Marine Fisheries Research Institute on behalf of Indian Council of Agricultural Research (ICAR).

GMe has techniques to identify the active components and to concentrate them to have higher activity; it has sustained activity and no toxicity due to the unique biochemical engineering methodologies adopted to develop the product. This product is designed to find a unique way to prevent the degradation by air, moisture, heat and light and to maximize the activity. The product is free from deleterious carcinogenic *trans*fatty acids, free radicals/ free radical adducts, low molecular weight carbonyl compounds. Long term study on mammalian model proved the efficiency and safety of this nutraceutical.

This product will be commercially produced and marketed by Accelerated Freeze Drying Company Pvt. Ltd. under their brand name. The commercialization of Cadalmin™ GMe is significant to the mariculture industry and fishermen as this will enhance the demand to produce more green mussels, particularly along the west coast of India. The company plans to produce about 100 million capsules for domestic as well as for export purposes.



Signing of MoU by Dr. Syda Rao, Director, CMFRI and Dr. Tharakan, Chairman, AFDC Ltd. Dr. Vijaykumaran, Director General, FSI is also seen

Acute toxicity studies and lethal dose of Cadalmin™ GMe using adult Wistar rats to understand its effect on various parameters indicated that Cadalmin™ GMe (up to 4.0 gm/kg body weight) given to experimental subjects (male and female) did not produce any change in food consumption, water consumption and body weights in rats, indicating that it has no toxicity to these animals. Also it did not produce any biochemical changes related to hepatic and renal function. This product did not produce any change in haematological parameters such as WBC, RBC, platelet, haemoglobin and differential count neither it caused any weight loss to the animals, or any weight

change in organs. Necropsy of the treated animals showed normal appearance of various tissues. A long term chronic toxicity studies did not produce any change in food consumption, water consumption and body weights in rats, indicating that Cadalmin™ GMe did not produce any toxicity to these animals. Also it did not produce any biochemical changes related to hepatic and renal function. Lipid profile such as cholesterol, HDL-cholesterol, LDL cholesterol and triglycerides levels were unchanged in experimental subjects after the trial.

(Reported by Kajal Chakraborty, Scientist-in-charge, ITMU)



Exchanging signed agreement