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ONLINE ISSN : 1881-3976

PRINT ISSN : 1341-7592

Food Science and Technology International, Tokyo

Vol. 4 (1998) , No. 3 pp.235-240


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Foaming Power and Emulsifying Properties of the Hydrolyzates by Lipase from *Rhizopus arrhizus* on Digalactosyldiacylglycerol and Trigalactosyldiacylglycerol Extracted from Pumpkin

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(Received: January 6, 1997)

(Accepted: April 19, 1998)

Digalactosyldiacylglycerol (DGDG) and trigalactosyldiacylglycerol (TGDG) were extracted from pumpkin and then hydrolyzed to the corresponding monoacylglycerols by 1,3-specific lipase from *Rhizopus arrhizus*. The hydrolyzates from DGDG and TGDG were identified as digalactosylmonoacylglycerol (DGMG) and trigalactosyl-monoacylglycerol (TGMG) by TLC analysis, acid hydrolysis and GC analysis, respectively. The surface tensions of the aqueous DGMG and TGMG solutions significantly decreased up to 0.005% DGMG and TGMG, and then decreased slightly at more than that concentration. The foamabilities increased with the DGMG and TGMG contents. The foamabilities and the foaming stabilities of DGMG and TGMG were superior to those of the other commercial emulsifiers. The interfacial tensions at the water/kerosene interface of DGMG and TGMG significantly decreased up to 0.001% DGMG and TGMG, and then slightly decreased at more than that concentration. The types of water/kerosene (1:1, w/w) emulsions prepared with DGMG and TGMG were O/W, respectively. The creaming stabilities and the strength of the interfacial film of the emulsions increased with the DGMG and TGMG contents. The emulsifying properties of the DGMG and TGMG emulsions were almost equal to those of the commercial emulsifiers.

Keywords: [glyceroglycolipid](#), [lipase](#), [foamability](#), [foaming stability](#), [emulsifying ability](#),



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Takashi NAKAE, Takashi KOMETANI, Takahisa NISHIMURA, Hiroshi TAKII and Shigetaka OKADA, **Foaming Power and Emulsifying Properties of the Hydrolyzates by Lipase from *Rhizopus arrhizus* on Digalactosyldiacylglycerol and Trigalactosyldiacylglycerol Extracted from Pumpkin** *FSTI*. Vol. 4, 235-240. (1998) .

doi:10.3136/fsti9596t9798.4.235

JOI JST.JSTAGE/fsti9596t9798/4.235

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