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Improving the stability of catechin from gambier in β -cyclodextrin and nanoemulsion-based inclusion complexes

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Improving the stability of catechin from gambier in β -cyclodextrin and nanoemulsion-based inclusion complexes

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[IOP Conference Series: Materials Science and Engineering, Volume 980, 1st International Conference on Science and Technology for Sustainable Industry \(ICSTSI 2020\) 6-7 August 2020, Banjarbaru, Indonesia](#)

Citation G Yeni *et al* 2020 *IOP Conf. Ser.: Mater. Sci. Eng.* **980** 012048 **DOI** 10.1088/1757-899X/980/1/012048

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Abstract

The application of catechin is limited due to low stability, however nanoencapsulation technology can improve catechin stability. This study aimed to determine the effect of the types and concentrations surfactants in the catechin encapsulation process on β -CD. Concentrations of surfactants used were Poloxamer 188 (NKP, 0.5%-1.5%), Tween 80 (NKT, 2.5% and 3%) without surfactants was used to control (NKB). The catechin nanoemulsion complex formed was inclusion them into β -CD (ratio 1:1), and dried by spray drying. The stability test showed a sample of NKP 1% was more stable with the lower turbidity and viscosity values, namely 175 NTU and 0.93 cP, NKT 2.5% (118 NTU and 0.94 cP), NKB (461 NTU and 4.0 cP). The size of the sample particle decreased according to an increase in the surfactant concentration, where the NKP 1% (37 nm) produced smaller particles, the appearance of clear and yellowish suspension. NKP 1% had the highest EE value,

followed by that NKT 2.5%, and NKB, i.e. 91.9%, 89.5%, 77.4%, respectively. Sample NKP 1% had a morphology shape with compact structures and the highest crystallinity degree (92.4%). This research showed the use of surfactants could improve the stability of catechins compared to that without surfactants.

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