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## Effects of Bifidobacterium Bifidum F-35 microcapsules on production of Acetoin and Diacetyl at set-yogurt

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New strategy was established for microencapsulation of Bifidobacterium bifidum F-35 and production new types of microcapsules. They protein isolate was used to produce a one-layer microcapsule using Transglutaminase-induced gelation. Meanwhile, sodium lginate was used as extra layer for production a double-layer microcapsule. The Free and microencapsulated cells were added eparately to the raw material of yogurt and divided to four groups. The extraction and quantification of diacetyl and acetoin were carried out using GC-Mass prior to storage, 7 and 14 days (Alonso & Fraga, 2001). Minor variations of acetoin and diacetyl values among all of the treatments were observed, which might be attributed to the metabolic enzymes of LAB and volatilization of these flavor compounds (Tamime and Robinson, 1999; Bonczar, 2002; Supavititpatana *et al.*, 2010). The One layer treatment showed fluctuation at values of acetoin and diacetyl after 7 days of storage, which might be due to the competition between metabolic activity of *B. bifidum* F-35 and *Lb. bulgaricus*. It is noticeable that the diacetyl values at one layer treatment is high till the 7<sup>th</sup> day, but it soon disintegrated after the 14<sup>th</sup> day, which is reflecting the low growth of *Str. thermophilus* and *B. bifidum* F-35 (El-Shenawy *et al.*, 2012). The gradual increase of acetoin and diacetyl up to the end of storage is shown obviously at the double layer treatment which due to the high metabolic activity of *Lb. bulgaricus* during the entrapping of *B. bifidum* F-35 into the microcapsules and the low viability of *Str. thermophilus* at the acidic environment of yogurt.

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