

## **Stability of Cloudberry Ellagitannins Encapsulated in Maltodextrins**

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We have been investigating the encapsulation efficiency and stability of cloudberry (*Rubus chamaemorus*) ellagitannins. The stability was investigated using antioxidant activity tests like DPPH radical scavenging test and liposome oxidation model. Ellagitannins were encapsulated in two different dextrose equivalent (DE) maltodextrins (DE5–8 and DE18.5). In the antioxidant activity tests there was no difference between unencapsulated and encapsulated ellagitannins. Although maltodextrin DE5–8 (with higher molecular weight) encapsulated more efficiently compared to maltodextrin DE18.5 (with lower molecular weight).

Cloudberry phenolics were extracted with 70% acetone in water, and the extract were purified by using Amberlite XAD column to remove sugars and some other phenolic compounds than ellagitannins. The extract consisted of 62% of ellagitannins and 10% each of hydroxycinnamic acids, hydroxybenzoic acids, and catechins. The microcapsules were prepared by freeze-drying a water solution of ellagitannin extract (1% w/w) and maltodextrin (9% w/w). As a control, ellagitannin-water solution (without maltodextrin) was freeze-dried similarly. The encapsulated and unencapsulated ellagitannin were stored at 25°C in the dark at three relative humidities (0%, 33% and 66%), and the stabilities of the samples were characterized at various time intervals (after 0, 8, 16, 32 and 64 days).

Radical scavenging activity was tested using the stable 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical. Liposomes were prepared from soybean lecithin to a final phosphatidylcholine content of 0.8% by weight. Cloudberry phenolic extracts were incorporated into the liposomes at concentration of 8.4 µg/ml. The inhibition of conjugated diene formation were at the beginning approximately 60% and the hexanal formation about 75%. The radical scavenging activity was 80%. During the storage, the antioxidant activity of encapsulated and unencapsulated ellagitannin remained the same as at the beginning irrespective of storage relative humidity. The encapsulation efficiency for these two maltodextrins differed. The retention of ellagitannins in maltodextrin DE5–8 was better than maltodextrin DE18.5.