

Insoluble antioxidant material for edible oil, etc.

Realization of synergistic oxidation inhibition by combination with vitamin E

Overview

When unsaturated fatty acid contained in abundance in rice oil and linseed oil, which are expected to have preventive effect against lifestyle-related diseases, is oxidized, it exhibits unpleasant odor and toxicity derived from peroxide and aldehyde. On the other hand, it has been reported that spermine, a polyamine compound, synergistically inhibits oxidation with vitamin E which is widely used as an antioxidant. However, polyamine compound has a characteristic odor and it is relatively expensive, so it is difficult to apply for a general usage. The inventors have found that polyethylenimine (PEI) can be used as an antioxidant with advantage over polyamine compound in term of odor, cost, and oxidation suppression ability.

[Effect]

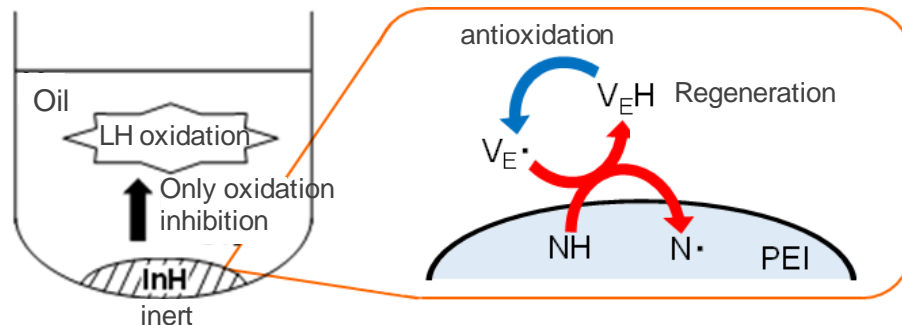
- Increase oxidation inhibition by vitamin E
- Synergistic antioxidant effect can be obtained for omega-3 oil, which does not well inhibit oxidation by vitamin E
- Since PEI is insoluble in oil and highly viscous, it can be used for direct coating on oil storage container to obtain its oxidation suppression effect.

Product Application

- Antioxidant as food additive
- Antioxidant as indirect food additive (packaging material, etc.)

IP Data

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Oxidation inhibition by the combination use of vitamin E and PEI

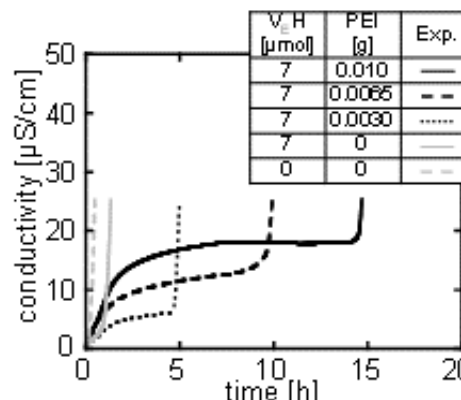


Fig.1 Effect of PEI addition on model oil oxidation

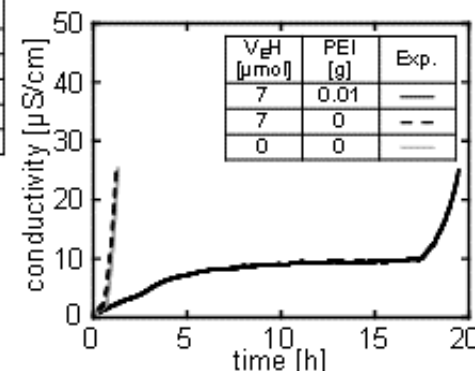


Fig.2 Effect of V_EH and PEI addition on perilla oil oxidation

Related Works

- [1] 10th JACI/GSC Symposium, poster presentation, C-45, 2021
- [2] Society of chemical engineers, Japan, Akita conference, oral presentation, E122, 2021

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