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(54) **METHOD FOR INHIBITING OXIDATION OF POLYUNSATURATED LIPIDS**

5,891,491 A 4/1999 Owens et al.

FOREIGN PATENT DOCUMENTS

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EP 209509 * 1/1987
EP 0 209 509 9/1991
JP 6-305956 11/1994

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* cited by examiner

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(57) **ABSTRACT**

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The present invention generally relates to inhibition of oxidation of polyunsaturated lipids by mixing the polyunsaturated lipids with a combination of polyamines providing a unique anti-oxidative effect on the polyunsaturated lipids. A especially advantageous combination of polyamines used in this regard includes spermine and a different linear aliphatic polyamine, such as spermidine, putrescine, or mixtures thereof. The rate of off-flavor development is significantly reduced in polyunsaturated lipids blended with such combinations of different polyamines. In addition, polyunsaturated lipid-containing materials and compositions can be stabilized using edible, non-toxic anti-oxidants based on such polyamine combinations. Omega-3 fatty acids and compositions containing them are especially well-suited for processing in this manner. The stabilized polyunsaturated lipid-containing products obtained in this manner have extended shelf-life while permitting the health and nutritional value of the treated lipids to be more fully accessed.

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(52) **U.S. Cl.** **584/5**; 426/541

(58) **Field of Search** 584/5; 426/541

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,253,848 A	3/1981	Porter
4,957,757 A	9/1990	Law et al.
4,975,290 A	12/1990	Artz et al.
5,015,483 A	5/1991	Haynes et al.
5,077,069 A	12/1991	Chang et al.
5,118,665 A	6/1992	Pickart
5,230,916 A	7/1993	Chang et al.
5,304,679 A	4/1994	McEvily et al.
5,733,524 A	3/1998	Bucala et al.
5,801,200 A	9/1998	Bucala et al.

38 Claims, 2 Drawing Sheets

