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United States Patent [19][11] **Patent Number:** **6,162,806**

Arai et al.

[45] **Date of Patent:** **Dec. 19, 2000**[54] **ACTIVE OXYGEN SCAVENGERS
CONTAINING PTERIN DERIVATIVES***Attorney, Agent, or Firm*—Sughrue, Mion, Zinn, Macpeak
& Seas, PLLC[75] Inventors: **Toshiyuki Arai; Keisuke Makino;
Kenjiro Mori**, all of Kyoto, Japan[57] **ABSTRACT**[73] Assignee: **Artemis, Inc.**, Tokyo, JapanAn active oxygen scavenger comprising as an active ingredi-
ent a pterin derivative of the formula (I):[21] Appl. No.: **09/051,054**[22] PCT Filed: **Jul. 30, 1997**[86] PCT No.: **PCT/JP97/02649**§ 371 Date: **Mar. 31, 1998**§ 102(e) Date: **Mar. 31, 1998**[87] PCT Pub. No.: **WO98/04558**PCT Pub. Date: **May 2, 1998**[30] **Foreign Application Priority Data**

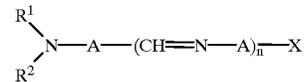
Jul. 31, 1996 [JP] Japan 8-218043

[51] **Int. Cl.**⁷ **A61K 31/495; A61K 31/505;
C07D 475/00**[52] **U.S. Cl.** **514/249; 514/256; 544/258**[58] **Field of Search** **544/258; 514/249,
514/256**[56] **References Cited****FOREIGN PATENT DOCUMENTS**

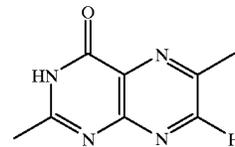
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wherein R¹ and R² are independently a hydrogen atom, an alkyl group of 1 to 4 carbon atoms, or an acyl group of the formula R³—CO—, R³ is an alkyl group of 1 to 4 carbon atoms, X is a formyl group or hydroxymethyl group, A is a group of the formula (Ia):



and n is 0 or an integer of 1 or more, with the proviso that when X is a hydroxymethyl group, n is 0, or when n is an integer of 1 or more, each of R¹ and R² is a hydrogen atoms, and X is a formyl group, or a cyclic compound thereof, or a salt thereof is disclosed.

10 Claims, 5 Drawing Sheets