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Eder et al.

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(54) **USES OF PIPERIDINYL-INDOLE
DERIVATIVES**

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2008/0233113 A1* 9/2008 Bansal A61P 5/00
514/1.1

2016/0152605 A1 6/2016 Adams

FOREIGN PATENT DOCUMENTS

WO 2014002058 A2 1/2014
WO 2015009616 A1 1/2015
WO 2017/109208 A1 6/2017

OTHER PUBLICATIONS

Karpman et al. "Complement contribute to the pathogenesis of Shiga toxin-associated hemolytic uremic syndrome," *Kidney International*, 2016, vol. 90, pp. 726-739 (Year: 2016).*

Holers, Complement, *Clinical Immunology*, 1995, 363-391, chapter 24.

Konar, et al., Eculizumab treatment and impaired opsonophagocytic killing of meningococci by whole blood from immunized adults, *Blood*, Aug. 17, 2017, 891-899, 130(7).

Lesavre, et al., Mechanism of action of factor D of the alternative complement pathway, *J Exp Med.*, Dec. 1978, 1498-1509, 148.

Volanakis, et al., Renal filtration and catabolism of complement protein D, *N Engl J Med.*, 1985, 395-399, 312(7).

* cited by examiner

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(57) **ABSTRACT**

The present invention relates to the novel use of certain piperidinyl-indole derivatives in the treatment of patients suffering from renal diseases or disorders, and in particular for the treatment of patients suffering from C3G (C3 glomerulopathy) and IgAN (IgA nephropathy).

14 Claims, No Drawings