United States Patent [19]

Lehmussaari et al.

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[54] **OPHTHALMIC COMPOSITION**

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[*] Notice: The term of this patent shall not extend beyond the expiration date of Pat. No. 5,710,182.

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[52] **U.S. Cl.** **514/459**; 514/912

[58] **Field of Search** 514/459, 912

[56] **References Cited**

FOREIGN PATENT DOCUMENTS

2839752 12/1995 Germany .

WO 9119481 12/1991 WIPO .
WO 9300887 1/1993 WIPO .

OTHER PUBLICATIONS

Florence Thermes et al., "Bioadhesion: The Effect of Polyacrylic Acid on the Ocular Bioavailability of Timolol", 1992, vol. 81, pp. 54–65, International Journal of Pharmaceutica.

Primary Examiner—Zohreh Fay

[57] **ABSTRACT**

The present invention is directed to an ophthalmic composition in the form of a topical aqueous solution consisting essentially of

an ophthalmologically active agent containing basic groups,

an ion sensitive, hydrophilic polymer containing acidic groups in an amount of 0.004 to 1.5% by weight,

at least one salt selected from the group of inorganic salts and buffers in a total amount of from 0.01 to 2.0% by weight,

and optionally a wetting agent and a preservative, the ratio between salt and polymer being such that the solution exhibits a viscosity of less than 1000 mpas, and the pH of the solution is 4.0 to 8.0. The composition contains a sufficient amount of polymer to provide for a controlled absorption of the drug into the eye, its viscosity having been reduced to provide for better handling characteristics.

10 Claims, 6 Drawing Sheets

Fig. 1

Fig. 2

Legend:
- THH 0.25%, 7300 cP
- THH 0.25%, 440 cP

Axis labels: Viscosity (cP); Shear rate (1/sec)

THH = Timolol hemihydrate

PAA = Carbopol 941
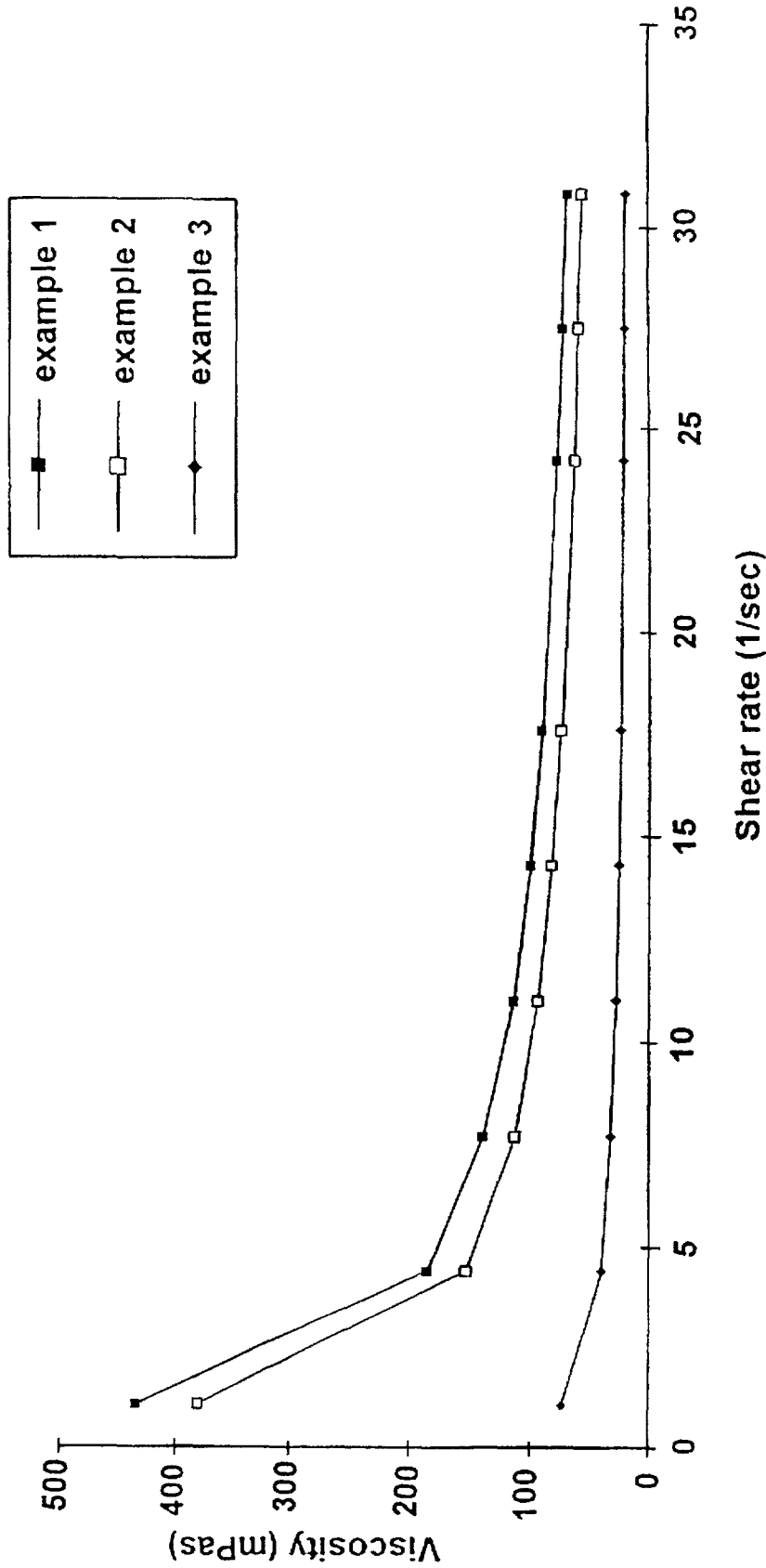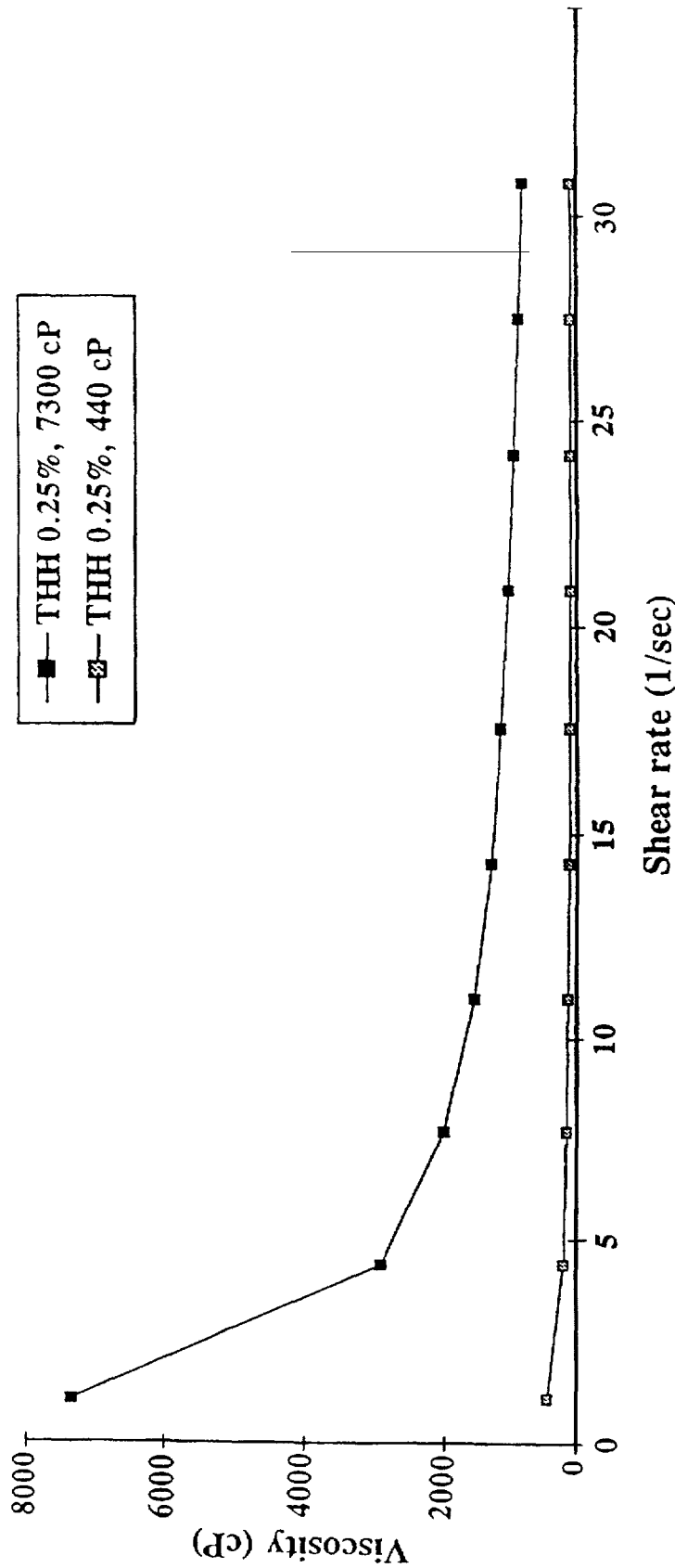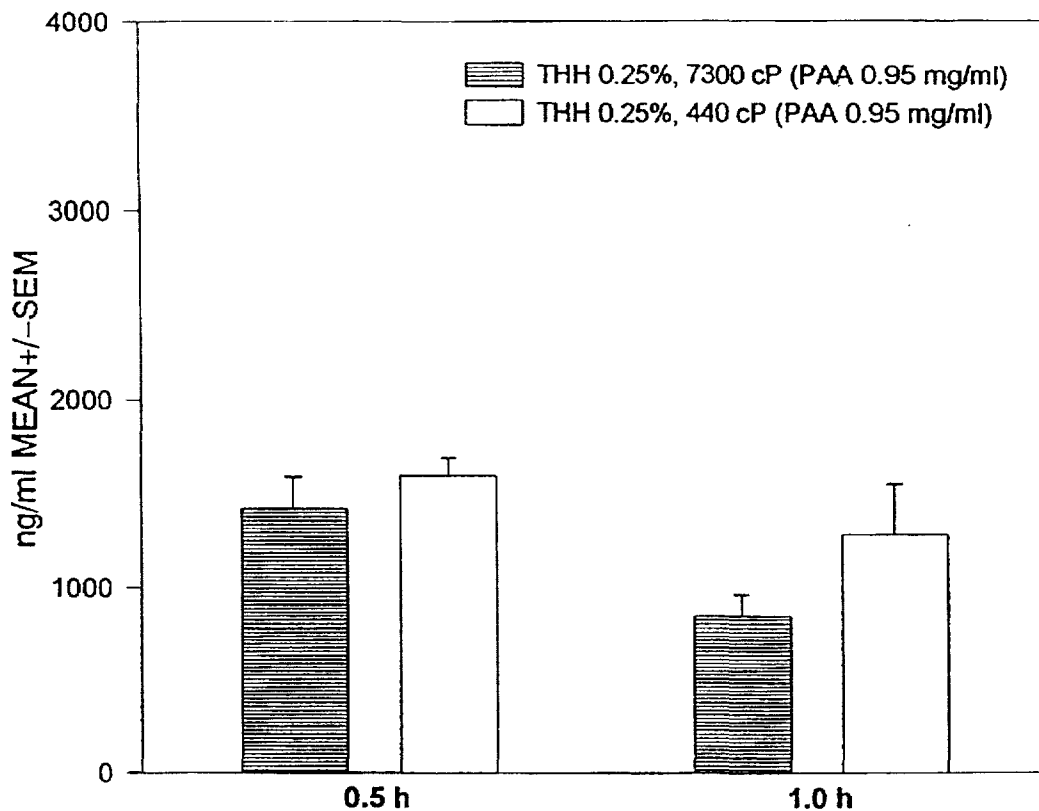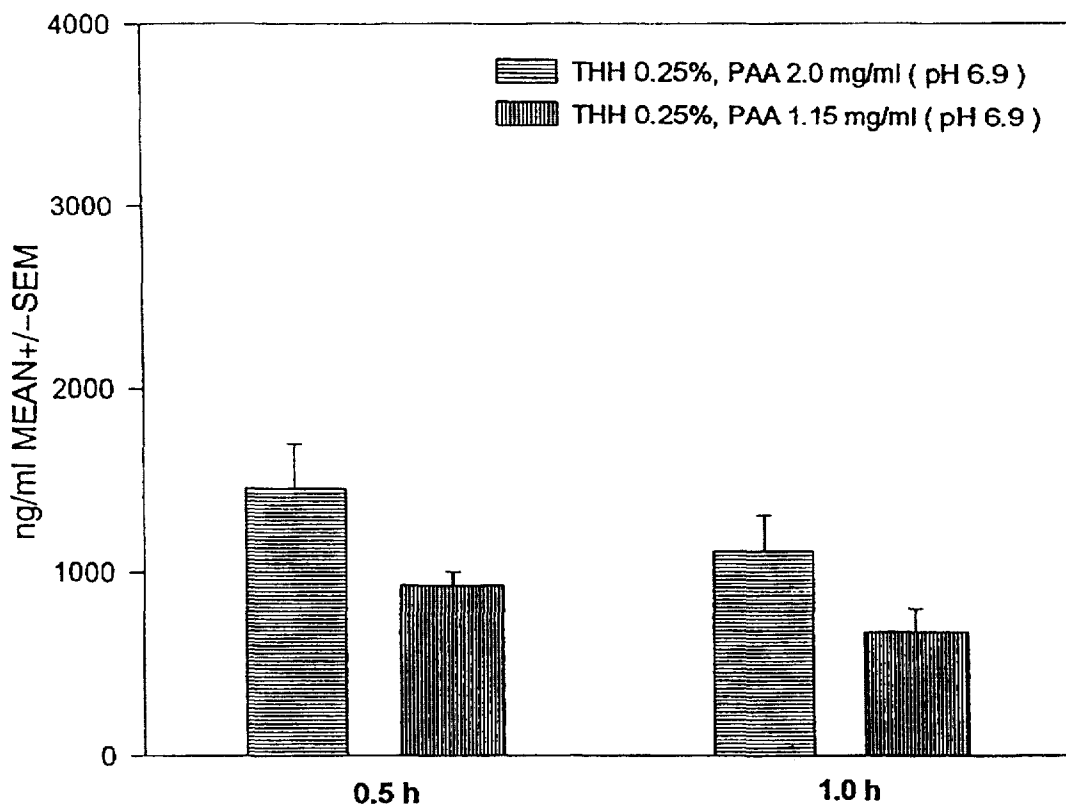
Fig. 3

THH = Timolol hemihydrate

PAA = Carbopol 941

Fig. 4

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