have primarily been used in topical biomaterials for the sustained release of active pharmaceutical agents. Sustained release of such drugs helps to maintain therapeutic drug concentrations over a longer period-of-time and helps to decrease dosage intervals, thereby increasing patient compliance.

[0009] There has been extensive research into poloxamers, which has resulted in various patent filings incuding, but not limited to U.S. Patent 7,879,320, U.S. Patent No. 4,188,373, U.S. Patent No. 6,482,435, EP Publication No. 1982696, U.S. Patent Application Publication No. 2016/0144038, U.S. Patent Application Publication No. 2009/0017120, U.S. Patent Application Publication No. 2012/0277199, U.S. Patent Application Publication No. 2015/0071864, PCT Publication No. WO2014/027006, U.S. Patent No. 8,829,053, and EP Patent Publication No. 2490722.

SUMMARY

[0009a] In one aspect, provided herein is a method of lowering the sol-gel temperature of a poloxamer gel composition by at least 3°C, comprising: adding 0.1 to 1.8 wt. % of a hydrophobic vicinal diol component to the aqueous poloxamer gel composition, wherein the poloxamer gel composition comprises 17 to 46 wt. % of a poloxamer component, wherein the poloxamer component is selected from the group consisting of Poloxamer 407, Poloxamer 188, and a combination thereof, and wherein the hydrophobic vicinal diol component is 6-carbon to 16-carbon length monoalkyl glycols, monoalkyl glycerols, monoacyl glycerols, or a combination thereof.

[0010] In various embodiments, a method of lowering the sol-gel temperature of an aqueous poloxamer gel composition by up to 12 °C is provided. The method includes adding 0.1

CLAIMS

1. A method of lowering the sol-gel temperature of a poloxamer gel composition by at least 3°C, comprising:

adding 0.1 to 1.8 wt. % of a hydrophobic vicinal diol component to the aqueous poloxamer gel composition,

wherein the poloxamer gel composition comprises 17 to 46 wt. % of a poloxamer component,

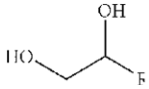
wherein the poloxamer component is selected from the group consisting of Poloxamer 407, Poloxamer 188, and a combination thereof, and

wherein the hydrophobic vicinal diol component is 6-carbon to 16-carbon length monoalkyl glycols, monoalkyl glycerols, monoacyl glycerols, or a combination thereof.

2. The method according to claim 1, wherein the hydrophobic vicinal diol component comprise hydrophobic monoalkyl glycols, monoalkyl glycerols, and monoacyl glycerols, and

wherein the hydrophobic substituents are aliphatic, linear or branched, and saturated or unsaturated.

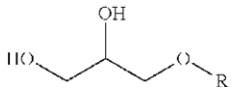
3. The method according to claim 1, wherein the hydrophobic vicinal diol component comprise a hydrophobic monoalkyl glycol having a structure of formula 1:



formula 1,

wherein R = C_6–C_{16} branched or unbranched alkyl group or alkylene group.

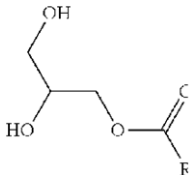
4. The method according to claim 1, wherein the hydrophobic vicinal diol component comprise a hydrophobic monoalkyl glycerol having a structure of formula 2:



formula 2,

wherein R = C_6–C_{16} branched or unbranched alkyl group or alkylene group.

5. The method according to claim 1, wherein the hydrophobic vicinal diol component comprise a hydrophobic monoacyl glycerol having a structure of formula 3:



formula 3, wherein R = C_6–C_{16} branched or unbranched alkyl group or alkylene group.

6. The method according to claim 1, wherein the poloxamer gel composition further comprises an active ingredient selected from the group consisting of at least 0.4% EDTA, at least 0.4% guar, at least 2% avobenzene, at least 2.5% lidocaine, 0.1% to 1% PHMB, at least 10% zinc oxide, at least 1% miconazole nitrate, at least 0.4% terbinafine, at least 0.5% acetylsalicylic acid, at least 5% Medihoney, at least 0.5% silver sulfadiazine, at least 0.5% amylase, and combinations thereof.