In the US 15.3 million people are affected by hyperhidrosis, which is 4.8% of the population. Only 51% of the affected people discussed their condition with a health care professional. 75% of the surveyed people report that their condition has had negative impact on their social life, well-being, emotional or mental health. A large part find that excessive sweating is embarrassing and leads to anxiety.

Available treatments include topical aluminum chloride hexahydrate, off-label oral anticholinergics, injectable botulinum toxin or surgery. They all vary in their efficacy, side effects, cost, and ease of use. Recently, a tiotropium bromide preparation has been suggested for topical administration to achieve an antiperspirant effect (CN106137955). It has, however, systemic effects in addition to local effects at the site of application.Tiotropium bromide is an anticholinergic agent. Oral anticholinergic medications such as glycopyrrolate, oxybutynin, benztropine and propantheline are known in the treatment of excessive sweating. However, in general, anticholinergic medications work systemically and cannot target one body area, therefore they decrease sweating over the entire body, even at locations where sweating is not a problem. This overall decrease in sweating can put the patient at risk for overheating. Moreover, these medications produce severe systemic side effects (extreme dry mouth, stomach cramps, urinary problems, etc.) and need to be discontinued.

Thus, there is still a need for developing compositions that target limited body areas that are affected with excessive sweating, and which compositions are easy to use, safe and effective.

Summary

In one aspect, the present disclosure relates to a dermatologically acceptable oil-in-water emulsion gel comprising tiotropium bromide. It also relates to the use of such a gel in cosmetics, as an antiperspirant or in the prevention and/or treatment of hyperhidrosis.

In another aspect, the present disclosure relates to a gel as described herein for use in the treatment or prevention of hyperhidrosis.

In another aspect, the present disclosure relates to a gel as described herein for use as an anti-perspirant.

In another aspect, the present disclosure also relates to a method for preparing an oil-in-water emulsion gel comprising tiotropium bromide, the method comprising

i) preparing an hydroalcoholic gel comprising one or more water-soluble cellulose derivatives,

ii) preparing a organic phase comprising tiotropium bromide,

iii) mixing the hydroalcoholic gel with the organic phase to obtain said oil-in-water emulsion gel.