PARTICULATE COMPOSITION COMPRISING ENSIFENTRINE

CROSS-REFERENCE

This application claims the benefit of GB 2309605.0, filed June 26, 2023, which is incorporated herein by reference in its entirety.

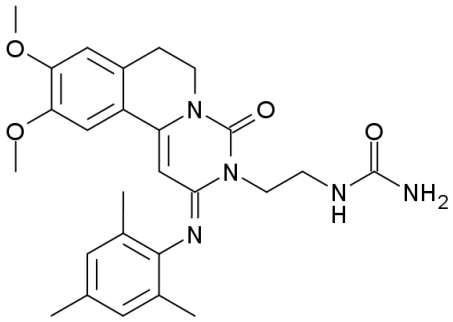
FIELD OF THE INVENTION

The present invention relates to a particulate composition comprising ensifentrine, as well as a pharmaceutical composition and a process for producing the particulate composition.

BACKGROUND OF THE INVENTION

Ensifentrine (*N*-(2-{(2*E*)-9,10-dimethoxy-4-oxo-2-[(2,4,6-trimethylphenyl)imino]-6,7-dihydro-2*H*-pyrimido[6,1-*a*]isoquinolin-3(4*H*)-yl}ethyl)urea, also known as RPL554) is a dual PDE3/PDE4 inhibitor and is described in WO 00/58308 A1.

As a combined PDE3/PDE4 inhibitor, ensifentrine has both bronchodilatory and anti-inflammatory activity and is useful in the treatment of respiratory disorders including chronic obstructive pulmonary disease (COPD). The chemical structure of ensifentrine is shown below.



Impurities associated with active agents need to be controlled, with only certain levels of specific impurities permitted in pharmaceutical products (with these impurities typically referred to as related substances). It has been found that known processes for producing ensifentrine are associated with undesirable levels of impurities. For instance, the process described in WO 00/58308 A1 in which a urea group is added using sodium cyanate and aqueous hydrochloric produces an