Novel Low Concentration Meloxicam Tablets

FIELD OF THE INVENTION

The present invention is directed towards a novel oral application form comprising a divisible meloxicam tablet and its production method.

BACKGROUND OF THE INVENTION

Meloxicam (4-hydroxy-2-methyl-N-(5-methyl-2-thiazolyl)-2H-1,2-benzothiazine-3-carboxamide-1,1-dioxide) is a non-steroidal-antiinflammatoriy drug NSAID of the oxicam family. These types of drugs inhibit the enzyme prostaglandine H2 synthase, also called cyclooxygenase or COX. Meloxicam has antiinflammatoric, antipyretic and analgetic properties.

Meloxicam and its sodium and meglumine salts are described in EP0002482. The active ingredient alone has a low water solubility as shown in EP0945134 that also discloses the pH dependent solubility of meloxicam and its salts. There are many different application forms of meloxicam including a solution (EP1299107), a suspension (EP1066029), water-soluble granules (EP1558262), tablets made of either granules containing meloxicam (EP1942902) or of directly compressed powder mixtures (EP1385483 and GB2455875).

The objective of the present invention is to develop a readily accepted, chewable solid meloxicam tablet allowing precise administration of meloxicam even for exceptionally low concentrations.

SUMMARY

In a first aspect, there is provided a solid tablet that is directly-compressed of powder, comprising meloxicam or a pharmaceutically acceptable salt thereof and one or more excipients, characterised in that the directly-compressed powder was not subjected to a granulation step, in that the directly-compressed powder was screened through a suitable mesh having a mesh size of 600 µm to 1500 µm and contains meloxicam particles with a particle size of equal to and less than the selected mesh size, and in that the tablet can be broken into two, three and/or four units with each unit containing equal amounts of the active ingredient.

In a second aspect, there is provided a direct compression process without any granulation step, comprising the following steps:

1) Premixing of meloxicam with 10 – 50% of a filler/disintegrant followed by screening through a suitable mesh having a mesh size of 600 µm to 1500 µm;
2) Premixing of a pH adjuster and one or more colouring agents followed by screening through a suitable mesh having a mesh size of 600 µm to 1500 µm;
3) Mixing of 90-50% of a filler/disintegrant, a second filler/disintegrant, flow regulator, lubricant and artificial flavour followed by screening through a suitable mesh having a mesh size of 600 µm to 1500 µm;
4) Admixing the blends obtained in steps 1) and 2) followed by screening through a suitable mesh having a mesh size of 600 µm to 1500 µm;
5) Final blending of the mixtures obtained in steps 3) and 4) followed by screening through a suitable mesh having a mesh size of 600 µm to 1500 µm;
6) Compression of the powder mixture obtained in step 5) into a tablet, wherein the tablet can be broken into two, three and/or four units with each unit containing equal amounts of the active ingredient.

In a third aspect, there is provided a solid tablet comprising meloxicam or a pharmaceutically acceptable salt thereof, wherein the solid tablet is obtainable by the direct compression process without any granulation step as defined above, wherein the tablet comprises directly-compressed powder screened through a suitable mesh having a mesh size of 600 µm to 1500 µm and contains meloxicam particles with a particle size of equal to and less than the selected mesh size and wherein the tablet can be broken into two, three and/or four units with each unit containing equal amounts of the active ingredient.

BRIEF DESCRIPTION OF DRAWING

Figure 1A: Tablet shape and dimensions of 1 mg meloxicam chewable tablets.

9. The solid tablet according to any of claims 1 to 8, characterised in that the lubricant is selected from the group consisting of macrogols (= polyethylene glycols), stearic acid, aluminium stearate, calcium arachinate and magnesium stearate.

10. The soild tablet according to any of claims 1 to 9, comprising 0.5 to 5 mg of meloxicam and a tablet weight of 500 mg to 2000mg.

11. The soild tablet according to any of claims 1 to 10, comprising a flavour in an amount of 2 to 15% by weight of the total tablet weight.

12. The soild tablet according to any of claims 1 to 11, characterised in that the flavour is an artificial beef flavour.

13. The soild tablet according to any of claims 1 to 12, characterised in that the solid formulation contains meloxicam as a free base.

14. A direct compression process without any granulation step, comprising the following steps:
    1) Premixing of meloxicam with 10 – 50% of a filler/disintegrant followed by screening through a suitable mesh having a mesh size of 600 µm to 1500 µm;
    2) Premixing of a pH adjuster and one or more colouring agents followed by screening through a suitable mesh having a mesh size of 600 µm to 1500 µm;
    3) Mixing of 90-50% of a filler/disintegrant, a second filler/disintegrant, flow regulator, lubricant and artificial flavour followed by screening through a suitable mesh having a mesh size of 600 µm to 1500 µm;
    4) Admixing the blends obtained in steps 1) and 2) followed by screening through a suitable mesh having a mesh size of 600 µm to 1500 µm;
    5) Final blending of the mixtures obtained in steps 3) and 4) followed by screening through a suitable mesh having a mesh size of 600 µm to 1500 µm;
    6) Compression of the powder mixture obtained in step 5) into a tablet, wherein the tablet can be broken into two, three and/or four units with each unit containing equal amounts of the active ingredient.