CLAIMS:

1. Use of a~~A~~ co-crystal of (rac)-tramadol·HCl and celecoxib ~~or a pharmaceutically acceptable derivatives thereof, for use in the treatment of pain while~~ in the manufacture of a medicament for reducing the abuse liability of tramadol.

2. The ~~co-crystal for~~ use according to claim 1, wherein the molecular ratio between the (rac)-tramadol·HCl and celecoxib is 1:1.

3. The ~~co-crystal for~~ use according to any one of claims 1 or 2 comprising (rac)-tramadol·HCl and celecoxib in a molecular ratio of 1:1, characterized in that the co-crystal shows a Powder X-Ray Diffraction pattern with at least one of the peaks [2θ] selected from 7.1, 9.3, 10.2, 10.7, 13.6, 13.9, 14.1, 15.5, 16.1, 16.2, 16.8, 17.5, 18.0, 19.0, 19.5, 19.9, 20.5, 21.2, 21.3, 21.4, 21.8, 22.1, 22.6, 22.7, 23.6, 24.1, 24.4, 25.2, 26.1, 26.6, 26.8, 27.4, 27.9, 28.1, 29.1, 29.9, 30.1, 31.1, 31.3, 31.7, 32.5, 32.8, 34.4, 35.0, 35.8, 36.2 and 37.2[°], with the 2θ values being obtained using copper radiation ($Cu_{K\alpha1}$ 1.54060Å).

4. The ~~co-crystal for~~ use according to any one of claims 2 or 3, characterized in that the co-crystal shows a Powder X-Ray Diffraction pattern with peaks [2θ] at 14.1, 16.8, 19.0 and 22.7[°], with the 2θ values being obtained using copper radiation (CuKα1 1.54060Å).

5. The ~~co-crystal for~~ use according to claim 4, characterized in that the co-crystal shows additional peaks [2θ] at 7.1, 19.9 and 20.5[°].

6. The ~~co-crystal for~~ use according to claim 5, characterized in that the co-crystal shows additional peaks [2θ] at 13.6, 13.9, 17.5, 18.0, 19.5, 21.2, 21.3, 21.8, 22.6, 23.6, 24.1, 24.4 and 26.1 [°].

7. The ~~co-crystal for~~ use according to any one of claims 1 to 6 comprising (rac)-tramadol·HCl and celecoxib in a molecular ratio of 1:1, characterized in that the co-crystal shows a Powder X-Ray Diffraction pattern with peaks [2θ] selected from at 7.1, 9.3, 10.2, 10.7, 13.6, 13.9, 14.1, 15.5, 16.1, 16.2, 16.8, 17.5, 18.0, 19.0, 19.5, 19.9, 20.5, 21.2, 21.3, 21.4, 21.8, 22.1, 22.6, 22.7, 23.6, 24.1, 24.4, 25.2, 26.1, 26.6, 26.8, 27.4, 27.9, 28.1, 29.1, 29.9, 30.1, 31.1, 31.3, 31.7, 32.5, 32.8, 34.4, 35.0, 35.8, 36.2 and 37.2[°], with the 2θ values being obtained using copper radiation ($Cu_{K\alpha1}$ 1.54060Å).

8. The ~~co-crystal for~~ use according to any one of claims 1 to 7 comprising (rac)-tramadol·HCl and celecoxib in a molecular ratio of 1:1, characterized in that the co-crystal shows a Fourier Transform Infra Red pattern with absorption bands at 3481.6 (m), 3133.5 (m), 2923.0 (m), 2667.7 (m), 1596.0 (m), 1472.4 (m), 1458.0 (m), 1335.1 (m), 1288.7 (m), 1271.8 (m), 1168.7 (s), 1237.3 (m), 1168.7 (s), 1122.6 (s), 1100.9 (m), 1042.2 (m), 976.8 (m), 844.6 (m), 820.1 (m), 786.5 (m) 625.9 (m) cm^{-1}.

9. The ~~co-crystal for~~ use according to any one of claims 1 to 8 comprising (rac)-tramadol·HCl and celecoxib in a molecular ratio of 1:1, characterized in that the co-crystal has an orthorhombic unit cell with the following dimensions:

a = 11.0323(7) Å
b = 18.1095(12) Å
c = 17.3206(12) Å.

10. The ~~co-crystal for~~ use according to any one of claims 1 to 9 comprising (rac)-tramadol·HCl and celecoxib in a molecular ratio of 1:1, characterized in that for the co-crystal the endothermic sharp peak corresponding to the melting point has an onset at 164°C.

~~11. The co-crystal for use according to any one of claims 1 to 10, in the treatment of acute pain, chronic pain, neuropathic pain, nociceptive pain, mild and severe to moderate pain, hyperalgesia, pain related to central sensitization, allodynia or cancer pain, including diabetic neuropathy or diabetic peripheral neuropathy and osteoarthritis, fibromyalgia; rheumatoid arthritis, ankylosing spondylitis, frozen shoulder or sciatica.~~

~~12. The co-crystal for use according to any one of claims 1 to 11 wherein the pain is acute and chronic moderate to severe pain, acute moderate to severe pain, acute moderate pain, acute severe pain, chronic moderate to severe pain, chronic moderate pain, or chronic severe pain.~~

~~13.~~11. The ~~co-crystal for~~ use according to any one of claims 1 to ~~12~~10 wherein the co-crystal is comprised in a pharmaceutical composition also comprising at least a solubility enhancer polymer; wherein the solubility enhancer polymer is selected from polyvinyl caprolactam-polyvinyl acetate-polyethylene glycol graft copolymer or from copovidone,

povidone, cyclodextrin, polyethylene glycol and lauroyl macrogol-32 glycerides EP, preferably wherein the solubility enhancer polymer is selected from polyvinyl caprolactam-polyvinyl acetate-polyethylene glycol graft copolymer or other hydrophilic polymers selected from copovidone, or povidone, most preferably wherein the solubility enhancer polymer is copovidone.