Summary:
The invention covers novel macrocyclic peptides for treating pain through stimulation of opioid receptors that does not cause addiction.

Overview:
Opioid receptors are distributed widely throughout both the Central Nervous System and Peripheral Nervous System. Opiates that function as opioid receptor agonists such as oxycodone, morphine, opium and other compounds are known to have analgesic effects. However, these compounds are also highly addictive. The present invention utilizes molecules that have the same analgesic properties as that of currently available opiates but have a significantly reduced risk of addiction.

Application:
The peptides could be used to treat both inflammatory pain and neuropathic pain. In addition, they could be used to treat drug addiction, including opiate addiction.

How It Works:
These peptides exhibit both agonist and weak antagonist activity on opioid receptors. As a result, the peptides carry out analgesic effects while decreasing tolerance and the likelihood of addiction.

Benefits:
Individuals in need of analgesic therapy and/or addiction therapy could use this method with only a minimal risk of developing an addiction.

Why It Is Better:
Currently available opiates exhibit only agonist activity on the opioid receptors. Thus, even though they do have analgesic properties, they are also highly addictive. The peptides of the present invention have a much lower risk of addiction due to their antagonist activity, while still carrying out the same analgesic functions of currently available opiates.

Other Applications:
In addition to treating pain, these peptides could be developed as therapies to treat anxiety and depression.

Inventors: Jane Aldrich, SP Sanjeewa Nilendra Senadheera