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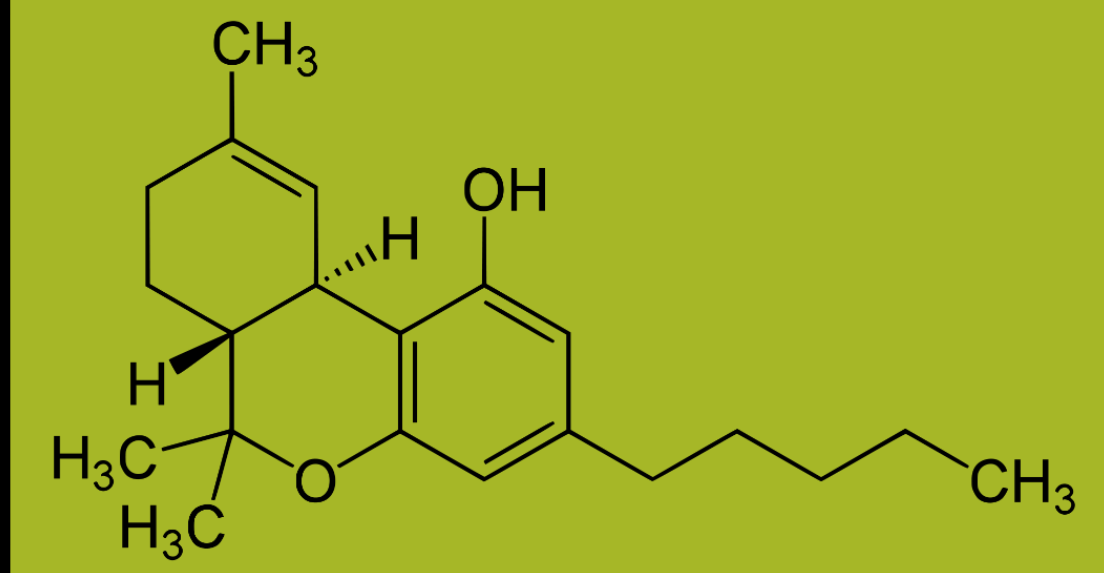
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# Cannabinoids: a possibility for pain management in the palliative cancer pathway



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## Introduction : Palliative Pain Management

Pain is a sensation that originates from ongoing tissue damage.<sup>1</sup> For palliative cancer patients this damage arises from tumour growth and spread. Up to 70-80% of patients with advanced cancer experience moderate to severe pain. It has also been shown that many of these patients do not receive adequate pain relief<sup>2</sup> with 50% of cancer patients pain being undertreated.<sup>3</sup>

In a comprehensive palliative care plan the management of pain is one of the essential elements.<sup>4</sup> Controlling the patient's pain level in palliative stages of the disease can improve the quality of life for the patient and help families and carers with the end of life process.

Individualised treatment of chronic pain should balance the burden of the side effects with the management of the pain.<sup>4</sup> The optimum balance of pain relief and maintaining a high quality of life is hard to achieve. Here we examine the current practice for pain palliation and how cannabis/cannabinoids may be used in the future to aid palliative care.

## Current Practice : Opioids

The current first-line analgesic for moderate to severe cancer pain is oral morphine recommended by the World Health Organisation (WHO).<sup>5</sup> Morphine is extracted from opium which is the resin derived from poppy sap. It has been recommended by WHO as a treatment for cancer related pain since 1980.<sup>6</sup>

Morphine has the benefit of having a short half-life, allowing frequent dose adjustments.<sup>5</sup> Morphine doses can range from 10mg-150mg per dose and is usually delivered every four hours.<sup>6</sup> This flexibility allows a palliative care team to closely monitor a patient's condition and tailor the dose to suitably manage chronic cancer pain. Morphine has a low cost, 100ml of morphine sulphate with 2mg of morphine per 1ml costs the NHS £2.01.<sup>7</sup> Morphine is also readily available<sup>5</sup> making it a natural choice for treating chronic palliative cancer pain.

However, opioid analgesics have the potential to cause side effects such as nausea, vomiting, respiratory distress, itching and constipation. When using morphine to treat chronic pain as a long-term therapy, dose escalation may be necessary if the patient develops tolerance to the opioid.<sup>6</sup>

The current practice for moderate to severe pain management is that morphine or codeine are typically prescribed as the first-line treatment however, this is not due to any pharmacological rationale. The prescriber should then be prepared to switch medication if needed, to select provide the best pain relief possible.<sup>4</sup>

Morphine has remained the first choice analgesic for the treatment of palliative cancer pain because of standard practice rather than proven superiority to other analgesics.<sup>2</sup>



## Cannabinoids : Future Analgesic?

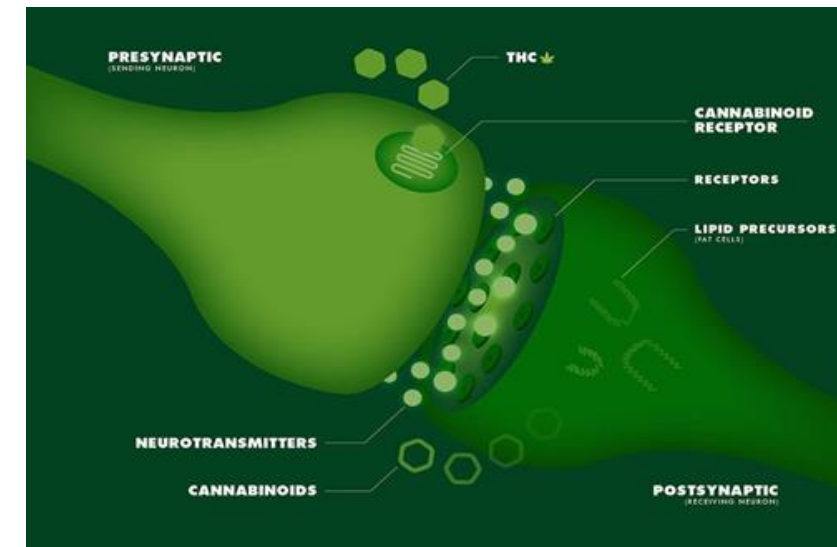
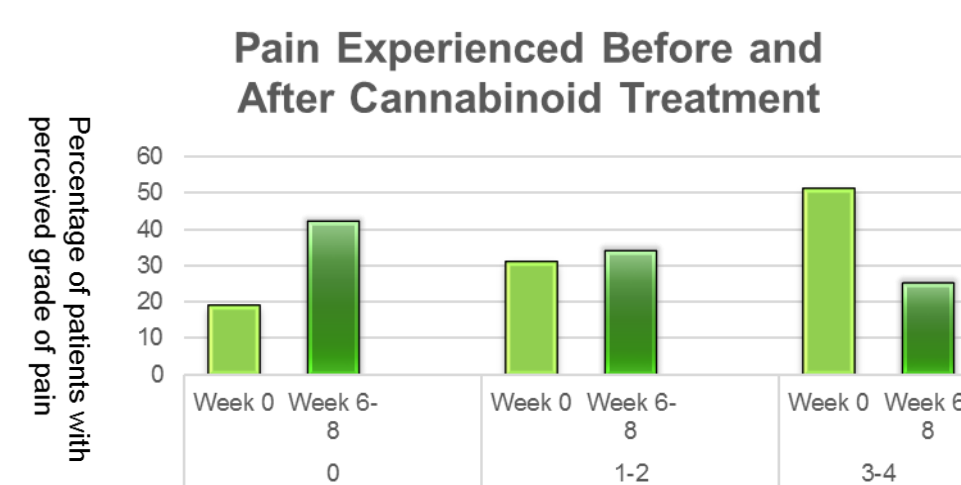


Figure 1. Mechanism of action for THC<sup>11</sup>

Cannabinoids are derived from the resin produced by the cannabis sativa plant. At least 60 active components are found in cannabis.<sup>9</sup> Studies have shown that tetrahydrocannabinol: cannabidiol (THC:CBD) extract is efficacious in the management of pain in advanced cancer patients which is not relieved by strong opioid therapy.<sup>10</sup> Figure 1 demonstrates the interaction of THC with the cannabinoid receptor on the presynaptic nerve.



Graph 1. Graph showing perceived pain before and after receiving cannabinoid therapy<sup>13</sup>

Cannabinoids have shown analgesic properties as seen in graph 1. Along with analgesic properties, cannabinoids can have anti-emetic and appetite inducing properties which are beneficial in palliative treatments.<sup>9</sup> These properties all indicate that further research should be carried out to assess the use of cannabinoids in controlling chronic cancer pain in palliative patients. One of the most interesting properties is cannabinoid's opioid sparing agents.<sup>9</sup> This could potentially allow the opioid dose to be reduced thereby reducing the side effects associated with opioid use.

However side effects of cannabinoids can include cognitive impairment, motor skill impairment, chronic bronchitis, anxiety, psychosis and potential cardiovascular toxicities.<sup>12</sup> These toxicities indicate that further investigation needs to be carried out before cannabinoids could receive The National Institute for Health and Care Excellence (NICE) approval.

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## Conclusion : Combination Therapy

The current practice for the management of palliative pain in cancer patients is due for review. Rather than employing evidence based practice current procedures rely on familiarity and old studies to support the continued use of opioids as first-line treatment. Cannabinoids have very promising properties that can be utilised in the treatment of chronic cancer pain in palliative patients. With 60 active ingredients, including those shown in figure 2, further research into the use of cannabinoids could provide a suitable alternative to opioids or produce a combination therapy.

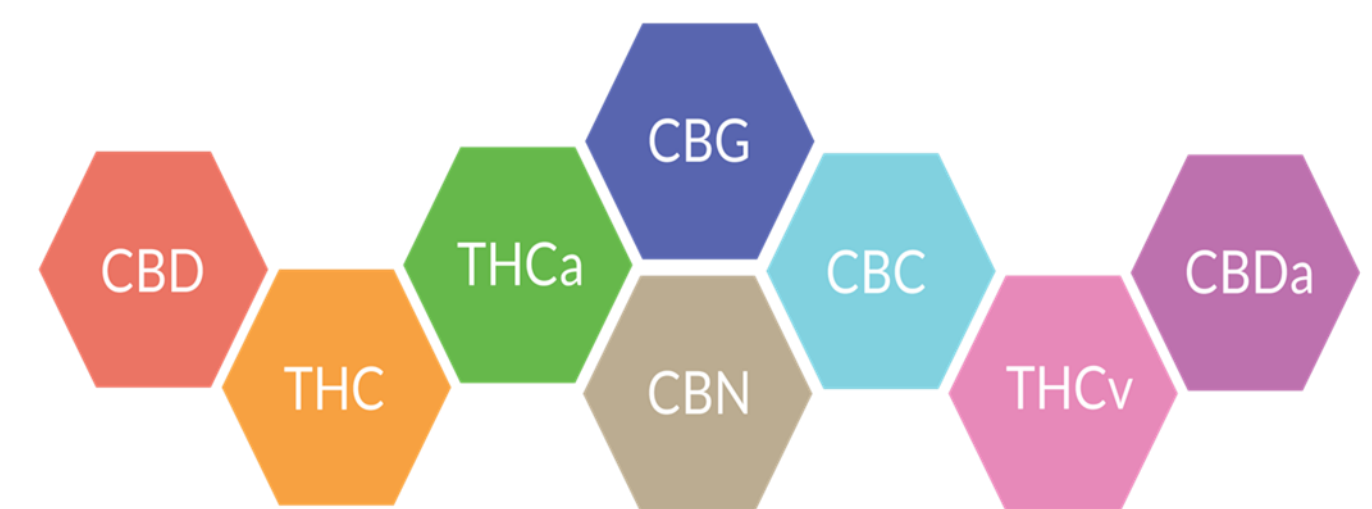


Figure 2. Active components with potential analgesic properties.<sup>14</sup>

The most exciting application found in current research is the outcome of combination opioid and cannabinoid therapy. Studies have shown that the interactions of opioids and cannabinoids may have an additive or synergistic antinociceptive effect when used in combination therapy. The practical application of this may allow for reduced doses which could reduce side effects while achieving satisfactory pain relief in palliation.<sup>15</sup> This potentially indicates that cannabinoids can be used to reduce opioid dependence and tolerance.<sup>16</sup> If this therapy proves to be achievable it could result in an acute improvement to the quality of life for palliative patients.

## Recommendations : Standardized Measure

When assessing current research for this poster it became clear that there isn't a current standard measure for pain or for the efficacy of analgesics. The European Palliative Care Research Collaborative project brought to attention the fact that the lack of consensus on the method used to assess and classify cancer pain. This has led to difficulties comparability in this area of research.<sup>2</sup>

A standardised system of measurement, while complex to establish, for something as subjective as pain, would be useful in validating results produced by studies. It could help us move away from using opioids as a first line treatment because of their familiarity but instead use them based on evidence. It would increase the efficiency of approval of new analgesic drugs, like cannabinoids. Treatment plans would then be evidence based to provide the most effective treatment for the management of chronic cancer related pain in palliative patients.

