

COMMENTARY

Cannabinoids and their actions

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With introductions to themed issues of journals, one is faced with the fundamental question of 'why'. First, why a themed issue, second, why the chosen topic 'Cannabinoids and their actions' and third, why the British Journal of Pharmacology (BJP).

Why a themed issue? A themed issue allows a focus of effort for authors, reviewers and readers. It is administrative 'catnip', in that the obsessive–compulsive tendencies, which are emergent in most scientists will inevitably be drawn to this pigeonholing approach.

Why the chosen topic 'Cannabinoids and their actions'? In April 2007, we (Steve Alexander and Michael Randall), together with Dave Kendall and Victoria Chapman, organized a meeting in Nottingham as the third in the series of European Workshops on Cannabinoid Research, which was delivered through the British Pharmacological Society (BPS) as a focused meeting. Abstracts from this meeting are/will be available through the BPS website. The speakers from this meeting were invited to generate reviews on the basis of their lectures or hot topic sessions. Many of the original articles presented here were also presented in preliminary form at this meeting.

Overall, the topic is a combination of the ancient and novel, in that cannabis has been used for millennia. In this themed issue, we have combined a number of invited reviews with a series of research articles.

The readership of the BJP will be familiar with two cannabinoid receptors, CB₁ and CB₂, which have been recognized for almost 15 years. Leading off the invited reviews is a summary on novel cannabinoid receptors by Andrew Brown. GPR55 and GPR119 are orphan receptors with recent evidence pointing towards activity as targets for cannabinoid- and endocannabinoid-like molecules. Saoirse O'Sullivan highlights recent evidence pointing to a family of nuclear receptors, peroxisome proliferator-activated receptors, as targets for synthetic, phytocannabinoids and endocannabinoids. John McPartland, Michelle Glass and Roger Pertwee have re-analysed published data from over 200

studies, in performing a meta-analysis of CB₁-cannabinoid receptor binding, investigating differences in ligand affinity and brain region distribution between man and rat.

Chris Fowler highlights the potential for an enzyme associated with inflammatory responses, cyclooxygenase-2, to metabolize the principle endocannabinoids, anandamide and 2-arachidonoylglycerol. He discusses further problems that arise from the similarities of the products of cyclooxygenase metabolism of endocannabinoids and arachidonic acid. This theme of the complications of enzyme action and the multiple targets associated with these metabolites is further expanded upon by Steve Alexander and Dave Kendall. As a follow-up, Maulik Jhaveri, Denise Richardson and Vicky Chapman look at endocannabinoid metabolism and uptake as potential novel targets for neuropathic and inflammatory pain. More central mechanisms of pain and the role of supraspinal regulation of transmitter release by cannabinoid receptors are presented by Kieran Rea, Michelle Roche and David Finn. Dave Baker, Samuel Jackson and Gareth Pryce assess the potential exploitation of cannabinoid regulation of neuroinflammation, particularly as it applies to multiple sclerosis, while Veronica Campbell looks at Alzheimer's disease as a potential focus of cannabinoids.

While undoubtedly a huge effort of research has focussed on cannabinoid action in the central nervous system, it is evident that cannabinoids are influential in every organ of the body. Reviews are, therefore, also presented on the role of cannabinoids in particular peripheral body systems, including the gastrointestinal tract (Gareth Sanger), haematological system (Michael Randall) and adipose tissue and pancreatic β -cells (Isabel Matias, Marie-Paule Gonthier, Stefania Petrosino, Ludovico Docimo, Raffaele Capasso, Laurence Hoareau, Palmiero Monteleone, Regis Roche, Angelo Izzo and Vincenzo Di Marzo).

In addition to these reviews, this themed issue presents a number of exciting original articles dealing with the actions of cannabinoids from the molecular level, through cellular and tissue levels to the whole animal level. It is likely that future issues of the BJP will include research papers dealing with effects of cannabinoids in man.

To deal with the third point, as to why the BJP, we can submit a number of responses. Firstly, that we are editors of this Journal and are, therefore, aware of the desire to initiate a

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series of themed issues. Additionally, the BJP, for a sustained period, has been at the forefront of cannabinoid research, with hundreds of publications on this topic in the last five years. We hope this issue fills you with as much excitement as to the future of cannabinoid research, as it has filled us.

Conflict of interest

The authors state no conflict of interest.

Further Reading

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- Baker D, Jackson SJ, Pryce G (2007). Cannabinoid control of neuroinflammation related to multiple sclerosis. *Br J Pharmacol* **152**: 649–654 (this issue).
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- Campbell VA, Gowram A (2007). Alzheimer's disease: taking the edge off with cannabinoids? *Br J Pharmacol* **152**: 655–662 (this issue).
- Fowler CJ (2007). The contribution of cyclooxygenase-2 to endocannabinoid metabolism and action. *Br J Pharmacol* **152**: 594–601 (this issue).
- Jhaveri MD, Richardson D, Chapman V (2007). Endocannabinoid metabolism and uptake: novel targets for neuropathic and inflammatory pain. *Br J Pharmacol* **152**: 624–632 (this issue).
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- McPartland JM, Glass M, Pertwee RG (2007). Meta-analysis of cannabinoid ligand binding affinity and receptor distribution: inter-species differences. *Br J Pharmacol* **152**: 583–593 (this issue).
- O'Sullivan SE (2007). Cannabinoids go nuclear: evidence for activation of peroxisome proliferator-activated receptors. *Br J Pharmacol* **152**: 576–582 (this issue).
- Randall MD (2007). Endocannabinoids and the haematological system. *Br J Pharmacol* **152**: 671–675 (this issue).
- Rea K, Roche M, Finn DP (2007). Supraspinal sites and mechanisms mediating the effects of cannabinoids on pain: the role of GABA and glutamate. *Br J Pharmacol* **152**: 633–648 (this issue).
- Sanger GJ (2007). Cannabinoids and the gastrointestinal (GI) tract: what are the key questions? *Br J Pharmacol* **152**: 663–670 (this issue).