House of Commons Science and Technology Committee: My Science Inquiry

Proposal from the Society for Applied Microbiology

Bacteriophage Therapy

Bacteriophages are non-living viruses that target specific bacteria (e.g. MRSA, TB) without negatively impacting the human body. Thus, they have various potential applications including treating bacterial infections in humans, livestock, aquaculture; and removing foodborne pathogens from the food chain.[1]

With bacteria increasingly resisting antibiotics (AMR) and no new antibiotics discovered since 1984, AMR is projected to cause 10 million deaths annually by 2050.[2] Bacteriophages are not known to be harmful to humans, animal or plants and provide an alternative to antibiotics, which can have adverse gastrointestinal and haematological side effects. Antibiotics also cost more to develop than phages, which are abundant in the environment. [3] Thus, it is critical we explore the potential of bacteriophages now.

Apart from on compassionate grounds, bacteriophage products are not currently approved for human use in the UK as there are no explicit regulatory guidelines for them.[4] However, in ex-Soviet Union countries phage therapy is well established, and centres in Georgia and Poland are already successfully treating patients with phage. The Committee should investigate developing a suitable UK regulatory framework for its use. Otherwise, pharmaceutical companies will not fund clinical trials to establish its full potential.

About the Society for Applied Microbiology

The Society for Applied Microbiology (SfAM) is the oldest microbiology society in the UK. As a membership organisation representing applied microbiologists globally, from both academia and industry, we believe that microbiology can solve the world's greatest challenges. Our member activities are centred around seven of the UN Sustainable Development Goals and we are conduit for scientific discovery to improve the planet for all.

www.sfam.org.uk

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[1] Wang Z, Zhao X, The application and research progress of bacteriophages in food safety.
[2] World Health Organisation, New report calls for urgent action to avert antimicrobial resistance crisis.
[3] Jinks T, Why is it so difficult to discover new antibiotics? / Romero-Calle D, *et al*. Bacteriophages as Alternatives to Antibiotics in Clinical Care.
[4] Naureen Z, *et al.* Comparison between American and European legislation in the therapeutical and alimentary bacteriophage usage.

References

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2. Jinks T. Why is it so difficult to discover new antibiotics? *BBC News* 27 October 2017, https://www.bbc.com/news/health-41693229 [Accessed 26th August 2022] / Romero-Calle D, Guimarães Benevides R, Góes-Neto A, Billington C. Bacteriophages as Alternatives to Antibiotics in Clinical Care. Antibiotics (Basel). 2019 Sep 4;8(3):138 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6784059/ [Accessed 26th August 2022].
3. World Health Organisation, *New report calls for urgent action to avert antimicrobial resistance crisis.* https://www.who.int/news/item/29-04-2019-new-report-calls-for-urgent-action-to-avert-antimicrobial-resistance-crisis [Accessed 26th August 2022]
4. Naureen Z, Malacarne D, Anpilogov K, Dautaj A, Camilleri G, Cecchin S, *et al.* Comparison between American and European legislation in the therapeutical and alimentary bacteriophage usage. *Acta Biomed* 2020; 91(13-S) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8023134/ [Accessed 26th August 2022]