

Literature review on millimeter waves (5G) and biological/health effects

Eric van Rongen
International Commission on Nonionizing Radiation Protection (ICNIRP)

The concerns on 5G primarily focus on the increased number of antennas that might lead to increased exposure levels. Whether that will be the case remains to be seen, but the antennas that will possibly in time appear in large numbers in the living environment are the ones that will operate with very high frequencies that only have a short range (26 GHz in most European countries). Most research and reviews on health effects of exposure to radiofrequency fields have focused on the frequencies used by current telecommunication systems and WiFi (between approximately 700 MHz and 5 GHz). There is much less information of health effects of frequencies of 10 GHz and higher (millimeter waves).

A recent review summarized 94 publications on *in vivo* and *in vitro* studies using frequencies between 6 and 100 GHz (Simko and Mattson, 2019). This presentation presents an overview of the studies from the review that fulfill the quality criteria of having a sham exposure group and adequate dosimetry and also adds a number of studies that were not included in the review.

Of the 40 resulting studies, 18 were on possible therapeutic effects and 8 on the effects of high-power heating. The remaining studies will be discussed.

Reference

- Simkó, M, and Mattsson, M.O. 5G wireless communication and health effects—A pragmatic review based on available studies regarding 6 to 100 GHz. *Int. J. Environ. Res. Public Health* 2019, 16, 3406; doi:10.3390/ijerph16183406)