Effects of Non-Ionizing Radiation from Radio Waves on the Ability of Medicinal Plants to Fight off Microbes

Marie Hammond*

Department of Pediatrics, National University, Croatia

Corresponding Author

Marie Hammond
Department of Pediatrics, National University,
Croatia E-mail: marie.hammond@gmail.com

Received date: 03-October-2022, Manuscript No: npcr-22-20908; **Editor assigned:** 06-October-2022, Pre-QC No npcr-22-20908 (PQ); **Reviewed**: 18-October-2022, QC No npcr-22-20908 (Q); **Revised date**: 21-October-2022, Manuscript No: npcr-22-20908 (R); **Published date:** 31-October- 2022, DOI: 10.35248/2329-6836.10.6.1

Abstract

Electromagnetic (EM) waves at high frequencies have been shown to be serious environmental pollutants. To meet the expanding needs for telecommunications, radio towers are being built in greater numbers. Tulsi, a medicinal plant used in pharmaceuticals, and Brahmi are the main focus of the research provided here on the investigation of EM waves on antibacterial properties. To the best of our knowledge, no work akin to this has been reported as of yet. EM waves with a 1.9 mg magnetic field at 900 MHz were used to expose the medicinal plants. In terms of growth, chlorophyll content, protein content, and carbohydrate content, our earlier research on plant physiology had negative consequences on the physiology of some selected plants. Two plants' antibacterial efficacy against a variety of bacterial and fungal strains was examined in the paper.

Keywords: Medicinal Plants • Electromagnetic waves

Opinion

Hazardous electromagnetic (EM) waves are being continuously sent into the environment by the inescapable use of cellular mobile communication with the intention of polluting it. For animal tissues, EM waves have been shown to be a powerful mutagen. Analysis of the biological impacts of electromagnetic radiation exposure on plants is encouraged because current literature does not adequately demonstrate the fierce biochemical effects of electromagnetic waves on plants. Ayurveda, a traditional Indian medical system, is still widely used in India and other Asian nations today. Natural products play a crucial role and have a position in therapeutics among the various treatment modalities. One of the greatest possibilities to use as a starting point for the production of pharmaceuticals is natural plant extracts. The plant's roots, leaves, branches, and stems all exhibit dielectric behavior that is imperfect. In these plant parts, the wave that is made up of shifting magnetic and electric fields propagates in a manner similar to that of a dielectric wave. Biochemical structural behavior may change as a result of ion oscillations or dipole relaxation in the plant dielectric material. It is necessary for dielectric materials to have complicated permittivity and permeability in order to cause wave losses, which may then result in a large rise in the temperature of the material being tested. For potential biological changes in plant tissues, the dielectric loss tangent of plant components may be thought of as an important phenomenon. It would appear that the Pointing Wave Power Theorem states that larger electric and magnetic field intensities will result in higher instantaneous power densities.

Endogenous electromagnetic fields have reportedly been shown to have a major impact on an organism's morphology and embryogenesis in addition to its metabolic rate. Distinct studies have found that microwave exposure has short-term beneficial benefits on seed germination and growth, but that long-term exposure has been found to have negative impacts on young spruce and beech tree growth. Irradiation's effects on the active ingredients in medicinal plants. Due to electromagnetic wave exposure, a number of elements are impacted, including exposure time and plant developmental stage. The effects of the Skrunda Radio Location Station's electromagnetic radiation dangers on the physiologic and morphological traits of the Spirodela polyrhiza as a result of continuous exposure to EM waves from Radar signals were discussed. According to the observations, long-term exposure caused morphological anomalies and a worsening of vegetative growth, with the impacts being more pronounced in the immature developmental stage. After short-term exposure, stimulatory effects were seen, which later worsened after long-term exposure, according to biochemical study looking at effects on different pigments and carbs content. Since assimilatory pigments like chlorophylls and total sugar content increased after short-term exposure, this indicated a higher photosynthetic rate, which eventually declined over long-term exposure, the impacts of short-term exposure can be deemed beneficial. Chlorophyll loss was accompanied by an increase in carotenoid-like assimilatory pigments, which suggests that leaves are ageing prematurely. Abiotic stressors including water stress, high heat or cold, salt, heavy metals or other pollutants, and radiation can all have an impact on the growth and physiochemical characteristics of plants. The potency of electromagnetic radiation as a determinant in plant health has thus been established. The amount of secondary metabolites, particularly phenolic compounds like flavonoids, tannins, and phenolic acid, which are in charge of the majority of medicinal plants' antibacterial, antifungal, and antiviral properties, is also significantly impacted. This has led to a significant increase in pharmaceutics research in this area. The goal of the experiment described was to determine whether non-ionizing electromagnetic waves had any effect on the antibacterial properties of particular plants. To test their antibacterial ability, the methanolic extracts of leaf samples from Osmium sanctum and Bacopa monnieri were tested against five bacterial strains and five fungus strains. Data from periodically exposed plants and electromagnetically-exposed control plants were compared to arrive at the interpretation. The purpose of the experiment was to determine the zone of inhibition using the agar disc diffusion method and the MIC using the broth dilution method. As conventional positive controls for the assay's comparative analysis, antibiotic and antifungal medications were also used. Comparing the modulation patterns of the two medicinal plants to those of plants that were not subjected to electromagnetic fields, the effects of high-frequency electromagnetic waves on their antibacterial potential were found to be remarkably similar. The increase in Oscimum sanctum and Bacopa monnieri's antibacterial and antifungal activities pointed to the activation of the plant defense system and a momentary beneficial effect that can be used going forward to reap the rewards of regulated exposure on medicinal plants.

Cite this article: Hammond H. Effects of Non-Ionizing Radiation from Radio Waves on the Ability of Medicinal Plants to Fight off Microbes. Nat Prod Chem Res. 2022, 10(6), 1