

Abstract

This paper presents the influence of cold plasma on mitotic division in *Triticum aestivum* L. Cold plasma is a fourth state of matter existing in the universe. Cold plasma electrodes was produced by a GlidArc, in the absence of water vapor. This study aimed to highlight the role of water vapor in the cold plasma upon the cells mitotic. Wheat seeds were exposed by cold plasma in four time: 2 minutes, 5 minutes, 20 minutes and 40 minutes, resulting in four experimental variants, which were compared with a control. Seeds treated with cold plasma were put to germinate and root meristems were used for cytogenetic analysis. Cytogenetic analysis had aimed to establish the mitotic index and any possible chromosomal aberrations. Cold plasma without water vapor has a inhibitory effect on mitotic division in root meristems of wheat, reducing the value of mitotic index in direct correlation with proportional action during cold plasma. Cells reacted differently in each mitotic phase in cold plasma action: cell proportions metaphases and anaphases are reduced compared to the control, compared with prophase and telophase cells. Mitotic index was affected very significantly in all experimental cases. Chromosomal aberrations induced by cold plasma in the absence of the water vapors, were insignificant in frequency. In experimental variants with 20 minutes and 40 minutes, they were not induced. This phenomenon is explained by the absence of water vapor during the performance of cold plasma treatment. The present study highlights the major role of this water vapor during production of cold plasma on cell mitogen. Water vapor potentiates the mutagenic effect of cold plasma.

Key words: cell, cold plasma, mitotic division, mitotic index