DEVELOPMENT OF HYDROGELS USED AS MARKERS FOR BREAST BIOPSY

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Breast cancer is currently the most common cancer and the leading cause of deaths among women worldwide. The number of deaths due to this disease has doubled in the last 22 years, affecting both developed and underdeveloped countries.

Early detection is crucial, achieved by a mammogram, which aims to visualize non-palpable lesions, calcifications, asymmetries in breast density, and/or distortion of the architecture of the gland. Through mammographic imaging, these indicators become visible, allowing the radiologist to request a tissue sample biopsy to assess the progression of the injury.

A breast biopsy is the removal of breast tissue to examine it for signs of cancer or other pathologies, there are different types of biopsies, including: stereotactic, open and lumpectomy.

Breast cancer diagnosis requires histopathological confirmation, minimally invasive biopsy is preferable to assure patient safety. During the breast biopsy procedure it is possible that most of the lesion is removed, which might make more difficult to locate the original lesion later on. Therefore, it has become a standard practice to place a marker in the breast tissue biopsy site for future reference. Regularly, a platinum wire or stainless steel spring is placed inside the breast to indicate where the biopsy was taken. Currently, there are numerous non-toxic biopolymers used in the biomedical field, these materials are compatible with the surrounding tissue, and have the ability to degrade or even metabolize some time after implantation.

In this research project, we propose the use of a hydrogel as a marker, which will have characteristics of radiopacity in order to be detected in imaging studies. As a biocompatible material, it would eliminate the anomalies that regularly affect patients who receive metallic markers, besides, the body can’t absorb these materials and in case of a negative biopsy result the removal of this marker becomes an invasive process.

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References:


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