SHORT COMMUNICATION

Journal of Cancer Science and Therapeutics

Green synthesis of nanomaterials for early lung cancer detection

Manikandan T*

Department of Electronics and Communication Engineering, Rajalakshmi Engineering College, Thandalam, Chennai, India

Lung cancer is the foremost cause of cancer-related deaths world-wide [1]. It affects 100,000 Americans of the smoking population every year of all age groups, particularly those above 50 years of the smoking population [2]. In India, 51,000 lung cancer deaths were reported in 2012, which include 41,000 men and 10,000 women [3]. It is the leading cause of cancer deaths in men; however, in women, it ranked ninth among all cancerous deaths [4]. It is possible to detect the lung cancer at a very early stage, providing a much higher chance of survival for the patients.

Lung cancer is difficult to diagnose because of the soft nature of lung tissues. The process called lung biopsy (taking a cancerous tissue out for microscopic analysis) is really painful [5]. Hence, physicians will not suggest for biopsy, unless there is a strong evidence for lung cancer.

Lung nodules are the indicator of cancer and are the tiny mass inside the lung. Most of the lung nodules are non-cancerous (benign), but about 40% of them are cancerous. Therefore, it is a real challenge for the researchers to quantify and describe the lung nodules. Hence it is essential to develop an efficient method to make an accurate decision on the cancerous nature of the nodules.

CT scans are usually preferred by the physicians to diagnose the cancer from patients who come up with the lung cancer symptoms. To assess the growth of the cancer, the patients should undergo several CT scans at regular intervals. The new CT scanner produces nearly 300 scans for a complete lung cross section for every patient [6]. The radiologists' job become tough as they need to analyse all these cross-sectional images of lungs, hence there is high possibility of error.

The most recent statistics provided by World Health Organization (WHO) indicates that around 7.6 million deaths worldwide each year is because of lung cancer. It is expected to continue rising to 17 million worldwide deaths in 2030 [7]. The only way to control the lung cancer death rate is diagnosis of cancer in its early stage [8]. So the necessity of techniques for lung cancer detection at an early stage is increasing.

Nanomaterials have unique features that are attractive, and can be applied to medical health care. The development of various nanomaterials and nanotechnology has enabled detection of cancer biomarkers with great precision and sensitivity that could not be achieved before [9]. Nanomaterials have unique properties like penetration and binding with the cancerous cells, which can be very effective in bio sensing. Quantum dots, Gold nanoparticles, Copper Sulphide nanoparticles, Silver nanoparticles, magnetic nanoparticles, and Carbon nanotubes have been developed recently for the lung cancer detection from its early stage [10]. Green synthesis of nanomaterials (Nanotechnology + Plant extract) has great deal of enhancement of cancer detection in nonmaterial based health care applications. Green extracts are normally chosen for the green synthesis, because it has properties like cancer binding and immune boosting. Hence, there is a scope to improve the biomarker based study for early lung cancer detection via green synthesis of nanomaterials.

References

1. Manikandan T, Bharathi N. Lung cancer detection from CT images using fuzzy inference system. *Computer Intelligence and Information Theory.* 2011; 250: 642-647.
2. http://lungcancerscreeningsaveslives.org/#screen-two.
3. Behera D. Lung cancer in India. *Medicine Update*. 2012; 22: 401-407.
4. http://www.beverlyfund.org/statistics.html
5. Manikandan T, Bharathi N. Hybrid neuro-fuzzy system for prediction of stages of lung cancer based on the observed symptom values. *Biomed Res J.* 2107; 28: 588-593.
6. Manikandan T, Bharathi N. Lung cancer detection using fuzzy auto-seed cluster means morphological segmentation and SVM classifier. *J Med Syst.* 2016; 40: 1-9.
7. Siegel R, Naishadham D, Jemal A. Cancer statistics, 2012. *CA Cancer J Clin.* 2012; 62: 10-29.
8. Lo SB, Lou SL, Lin JS, Freedman MT, Mun, SK. Artificial convolution neural network techniques and applications for lung nodule detection. *IEEE Trans Med Imaging.* 1995; 14: 711-718.
9. Choi YE, Kwak JW, Park JW. Nanotechnology for early cancer detection. *Sensors.* 2010; 10: 428-455.
10. Das T, Bandyopadhyay A, Yeasmin S. Nanoparticles in lung cancer therapy - Recent trends. Springer Briefs in Molecular Science. Publisher: Springer, India, 2015.

***Correspondence:** Manikandan T, Department of Electronics and Communication Engineering, Rajalakshmi Engineering College, Thandalam, Chennai, India, Tel: 9444649483; E-mail: mani_stuff@yahoo.co.in

Rec: May 07, 2018; Acc: May 21, 2018; Pub: May 25, 2018

Cancer Ther. 2018;1(1):2
DOI: gsl.cancer.2018.00002