

A novel biophysical based marker with multilevel, multiparameter expression for early stage cancer detection.

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Author(s): Junjie Wu, Gengxi Jiang, Jiansong Ji, Xuedong Du, Yue Lin, Hongmei Tao, Xing Tang, Chris Chang Yu; Changhai Hospital, The Second Military Medical University, Shanghai, China; Department of Thoracic Surgery, Changhai Hospital, Second Military Medical University, Shanghai, China; Lishui Central Hospital, Lishui, China; Anpac Bio-Medical Science Co. Ltd., Shanghai, China; AnPac Bio-Medical Science and Technology Co., LTD, Shanghai, China; Anpac Bio-Medical Science Co Ltd, Shanghai, China

[Abstract Disclosures](#)

Abstract:

Background: Early stage cancer detection remains to be elusive despite of many years of efforts. In this work, a bio-physical based marker (named Cancer Differentiation Analysis (CDA)) with multi-level and multi-parameter expression features has been developed which has shown a number of clear advantages over the traditional approaches such as bio-chemistry based marker, circulating tumor cell (CTC) and circulating DNA (ct-DNA). In stage I non-small cell lung cancer (NSCLC), sensitivity and specificity reached a record high of 85.2% and 93.0%, respectively. **Methods:** In this study, 832 NSCLC cancer samples with pathological information and 642 samples from healthy individuals were measured in a single blind test. Peripheral blood of each individual was drawn in EDTA tubes. One class of bio-physical property in blood samples was utilized for CDA tests. The CDA data were first processed using an algorithm built from data base and subsequently analyzed using SPSS. The results were shown in the table. **Results:** The results indicated that CDA technology has a very good sensitivity and specificity even at stage I (85% and 93%, respectively), which is much better than those previously reported results by other methods. **Conclusions:** Initial results showed that CDA technology could effectively screen NSCLC patients from healthy individuals. As a novel bio-physical based cancer detection approach with multi-level and multi-parameter expressions, CDA technology could be a potential candidate for early stage cancer screening.

NSCLC	CDA Data Set	Gender (Male %)	Age Range (year)	Average Age (year)	Median Age (year)	Average CDA (rel. units)	Median CDA (rel. units)	SD of CDA (rel. units)	AUC (rel. units)	Sensitivity	Specificity
Control	642	53	19 - 86	45	47	32.87	32.86	5.74	/	/	/
Stage cñ	108	58	28 - 97	60	61	49.49	50.63	9.03	0.939	85.2%	93.0%
Stage cò	90	84	45 - 78	61	60	52.38	53.66	7.21	0.967	93.3%	98.6%
Stage có	246	87	41 - 87	62	63	53.66	53.87	5.26	0.995	98.0%	98.1%
Stage cø	388	71	36 - 90	60	59	52.45	52.96	6.11	0.987	94.1%	97.7%

NSCLC single blind test results from statistical analysis of CDA.