

Meeting: [2004 ASCO Annual Meeting](#)
Category: Lung Cancer
SubCategory: [Non-Small Cell Lung Cancer](#)



Clinical utility of adenosine triphosphate-based chemosensitivity response assay (ATP-CRA) in non-small cell lung cancer: Preliminary study.

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Abstract: **Background:** Selection of optimal agents by laboratory test would in theory allow individualization of cancer treatment. Objectives of this study were to verify the feasibility of ATP-CRA using bronchoscopic biopsy specimens and the accurate prediction of clinical response to chemotherapeutic agents in NSCLC. **Methods:** Biopsies (5.8 to 22.2 mg, mean 11.4 mg) were obtained during bronchoscopy from 31 suspected lung cancer patients. Tumor cells were isolated by mechanical and enzymatic disaggregation followed by picol density gradient centrifugation. After 48 hours treatment with anti-cancer drugs, we evaluated the cell viability by measuring the intracellular ATP levels of drug-treated cells and untreated controls at peak plasma concentration of each drug. The sensitivity defined as a 30% or more reduction of ATP compared to untreated controls ($p < 0.05$, Fisher's exact test). **Results:** The assay results were available within four days. Interpretable results were obtained in 80.6% (25/31) of specimens. Six cases were failed to evaluate due to microbial contamination (5 cases) and less viable cells (1 case). Clinical outcomes were evaluable in 9 patients who were successfully tested, including one double comparison against the first and second line therapy in same patient. The regimen consisted of taxol and carboplatin as first line therapy and gemcitabine alone as the second line therapy. The clinical responses were blindly compared with ATP-CRA results. The mean coefficient of variation for triplicate ATP measurement was 13.0%. The sensitivity and specificity was 83.3% and 100%, respectively. The positive predictive value and negative predictive value was 100% and 80%, respectively. The overall diagnostic accuracy was 90%. **Conclusions:** The ATP-CRA using the bronchoscopic biopsy specimens has potential usefulness as an in vitro chemosensitivity screening test in NSCLC. The high evaluability rate and observed correlation with tumor response supported the use of ATP-CRA in prospective assay-directed trials. This preliminary study, within the limitation of small size of enrolled patients, is ongoing.

Associated Presentation(s):

A presentation was not made on this abstract

Other Abstracts in this Sub-Category:

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2. [A comparative serum proteomic analysis of responders versus non-responders in a phase II study of recombinant human Angiostatin \(rhAngiostatin\) protein + carboplatin + paclitaxel in advanced non-small cell lung cancer \(NSCLC\).](#)

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