

UNIVERSITI TEKNOLOGI MARA

**EFFECT OF CORD BLOOD
COTININE TOWARDS PLACENTAL
VEGF EXPRESSION IN PREGNANT
SECOND HAND SMOKER**

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Thesis submitted in fulfilment
of the requirements for the degree of
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CONFIRMATION BY PANEL OF EXAMINERS

I certify that a Panel of Examiners has met on 20th August 2015 to conduct the final examination of Muadz Baharom on his Master of Medical Science (Pathology) thesis entitled 'Effect of Cord Blood Cotinine towards Placental VEGF Expression in Pregnant Second Hand Smoker' in accordance with Universiti Teknologi MARA Act 1976 (Akta 173). The Panel of Examiners recommends that the student be awarded the relevant degree. The panel of Examiners was as follows:

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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Second hand smoking among pregnant mothers imposed a great danger to the fetus. Many complications are coined to many complications, as early as spontaneous abortion to the later developmental problem. Knowledge has been slightly increased on the mechanism of these complications, in particular on placental insufficiency. However, there is no literature on the mechanistic process in second hand smoker. Although torrents of public health warnings, tobacco smoking is still common in many parts around the world. This situation can effect particularly in the case of pregnant women, whose tobacco smoking impairs health risk to the fetus and subsequent child as well as to themselves. This cross-sectional study of paired mother infant deliveries was conducted in Sungai Buloh Hospital. Inclusion criteria included non-smoking pregnant women at term, whose partners were smokers and exposed to cigarette smoking and had no previous medical illness. A questionnaire that indicated demographics and socio-economic data and its exposure among Second Hand Smoker (SHS) was filled up to the mothers prior to deliveries. Placenta cord blood for cotinine was collected immediately after birth and analyzed. The delivered placenta was examined and the findings were noted. Four standardized locations of sampling (1cm each from the insertion of the umbilical cord) were performed, preserved in formalin and transported to the Anatomic Pathology Laboratory for histology processes. Haematoxylin and Eosin (H&E) slides were prepared and examined by 2 senior pathologists to ascertain any histological findings. Further stain was performed by immunohistochemistry (IHC) using Human anti-VEGF monoclonal antibody. For cotinine level, cases showed 16.35 ± 12.84 ng/ml higher than controls which was highly significant (p-value <0.001). Pearson's correlation analysis showed significant negative correlation between cord blood cotinine level and the placenta weight (p-value = <0.001, $r = -0.461$), baby weight (p-value = <0.001, $r = -0.297$), head circumference (p-value = <0.001, $r = -0.501$) and baby length (p-value = <0.001, $r = -0.374$). For IHC, there was a significant differences of the VEGF expression score among these groups ($P < 0.001$) which was up-regulated in cases group. Pearson's correlation analysis showed significant positive correlation between cotinine level and VEGF expression (p-value = <0.001, $r = 0.345$). It is possible to postulate the detrimental effect of a mother who are exposed to tobacco smoke via second hand smoking to their offspring at birth.

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