



اَوْبُو تَيْكُو لُو كِيْن مَارَا  
UNIVERSITI  
TEKNOLOGI  
MARA

**IDENTIFICATION OF TOTAL RNA AND MIRNA INTEGRITY WITH THE  
HISTOLOGICAL EFFECT OF FORMALIN FIXED ARCHIVE RABBIT'S  
LIVER TISSUE AFTER LONG –TERM PRESERVATION**

**By**

**AISHAH BINTI SUDIN**

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MARA**

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## **DECLARATION**

“I hereby declare that this thesis is based on my original work and has not has been submitted previously or currently for any other degree at UiTM or any other institutions.”

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**AISHAH BINTI SUDIN**

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## **ABSTRACT**

### **Identification of Total RNA and miRNA Integrity with the Histological Effect of Formalin Fixed Archive Rabbit's Liver Tissue after Long-term Preservation.**

MicroRNAs are short non-coding RNA, 21-25 nucleotides in length. Recent studies found that miRNA is resistant to high temperature, pH and formalin fixation process and it more robust than longer RNAs. However, it still unclear whether miRNAs remain stable in formalin fixed tissue stored for long period of time. Therefore, archive rabbit liver tissue specimens were used in this study to determine the morphology and integrity of total RNA and miRNA in formalin fixed archive rabbit liver tissues after long-term preservation. In order to determine the purity of the rabbit's tissue, the RNA extraction was performed using Quick-RNA™ FFPE Kit by Zymo Research Corporation. Then, the integrity of total RNA and miRNA were analyzed on Agilent 2100 Bioanalyzer System using the Eukaryote Total RNA Pico assay kit for total RNA and Agilent Small RNA kit for miRNA. While, the histology rabbit's liver tissues were stain by H&E stain and observe under 40X objectives. All three samples show the lowest RNA Integrity Number (RIN) which is less than RIN 3 from RIN 10. The highest RIN of archive rabbit's liver for total RNA was 2.70 and the lowest RIN was 1.50. On the other hand, the highest concentration of miRNA was 57pg/μl while the lowest concentration of miRNA was 12.60pg/μl. In histological morphology there is no presence of nucleus and the color of cytoplasm was faded and indistinct for all samples in histological morphology of rabbit's liver tissue. Our study has shown that even the total RNA of rabbit's liver tissue was unsatisfying and strongly degraded but the miRNA still present in the samples, so miRNA still can be preserved from archive tissue. However, we suggest that the liver archive tissues stored in formalin over an extensive time period are not suitable for research study purposed due to degradation of nucleic acid.

### **KEYWORDS:**

miRNA, total RNA, formalin-fixed, rabbit, liver