**UW Medicine - Pathology**

400-07-01-06

Suspension Harvester

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| Adopted Date: 09/05Review Date: 09/05Revision Date: 08/12 |

PURPOSE

To outline basic operation and troubleshooting of the automatic suspension harvester (Hanabi Pii. Most suspension cultures, blood and bone marrow are harvested with this machine. Hanabi Pii metaphase harvester is referred to as "Harvey". The Hanabi users manual is a more detailed resource and can be found in AA108 in the Operating Manuals drawer.

***Important:*** all tissue, lymph node, bone marrow biopsy and clotted specimens must be harvested manually

PROCEDURE

1. Pre-Operation checks
	1. Push Power ON protected button approximately 30 minutes before using
	2. Check Distilled Water tank: Make sure it is above minimum level line.
	3. Check Reagent waste tanks A and B: Make sure level is below max level line.
	4. Determine number of tubes in harvest.
	5. Make Fix and Hypo.\*\* Replace water bottles in left alcove with reagents
	6. Proceed with the Reagent Exchange program button on Main screen
	7. Check that the exhaust fan is on (box on top)

\*\* Table of volumes in mL for Step 1d:

|  |  |  |
| --- | --- | --- |
| Specimens | Volume Hypo | Volume Fix |
| 8 | 226 | 235 |
| 12 | 266 | 305 |
| 16 | 306 | 375 |
| 24 | 386 | 515 |

1. Start harvest process
	1. Add colcemid to cultures, set timer (30 minutes routine, 10 minutes MTX)
	2. Transfer contents of flasks into 15 ml conical tubes
	3. Transfer flask labels.
	4. Write case number on cap
	5. Add water tubes to 8,12,16, or 24 if needed to balance the machine
	6. Bring volume of 5ml tubes to 10 ml with PBS
	7. Select Protocol **A** for NE and PB > Main Process
	8. Select number of samples: 8, 12, 16, 24
	9. Press > Set Sample START
	10. Remove tube caps, place in tray
	11. Load first 4 tubes
	12. Close station (carriage) cover, snap down black button
	13. Wait for OK
	14. NEXT, wait for next station (carriage)
	15. Watch for OK or NG
	16. Load more tubes as required, wait for OK
	17. Press NEXT, Finish loading tubes
	18. Check that black buttons are all pushed down
	19. Close centrifuge cover
	20. Close Main hatch
	21. MAIN START (press for 5 seconds)
2. Finish Harvest Process
	1. Machine will beep repeatedly to indicate that the harvest is complete.
	2. Select “start” and wait for the carriage station to align (machine will beep when carriage is in place).
	3. Open the carriage cover and remove the tubes.
	4. Select “next” and wait for the next carriage station to align.
	5. Once all tubes are removed, select “stop.”
3. Shut Down Procedure
	1. Once all harvests for the day are finished, perform the shutdown procedure.
	2. Replace the fix and hypo bottles with bottles of deionized H2O.
	3. Select “Reagent Exchange” followed by “hypo”, then by “fix”, to exchange the fluid in the hypo and fix lines with distilled H2O.
	4. Return to “Main”. Select “Tube Wash” followed by “start.”
	5. Wait for the carriage station to align (machine will beep when carriage is in place).
	6. Prepare tube wash as follows. First dilute Dawn dishwashing detergent 1:4 in deionized H2O. Then add 1 drop of diluted detergent to 10 mL H2O.
	7. Place tubes of deionized H2O in stations A and B. Place tubes containing “tube wash” in stations A and D.
	8. Select “start”. The tube wash procedure will take approximately 10 minutes.
	9. Once the tube wash procedure is complete (machine will beep), select “start”, remove the tubes, then select “stop.”
	10. Pump drying: select “main”, then “reagent exchange.” Select the “start” button which is to the left of the “pump dry” button.
	11. Once the pump drying is complete, shut off the light and fan, then shut off the power.

**Troubleshooting**

If program is halted by an error before harvest end, machine will emit an alarm. Write down all error messages in detail on the log clipboard. Press RESET. Screen should read "SEMI\_MAIN A". Determine what step is terminated by reading screen (to the right of TERMINATED PROCESS #) and record in the log.. Then remove the tubes and continue the harvest manually OR continue harvesting in the machine-see below. (Hanabi User manual page 32)

1. To remove and harvest manually:
	1. After recording Terminated step and details in log sheet, press SEMI-AUTO.
	2. Press ORIGIN if indicated
	3. Press "L Remove"
	4. Press START and begin removing tubes
2. To continue interrupted machine harvest:
	1. Record terminated step in log sheet.
	2. Determine if all tubes are at completion of a process. Do all tubes have same fluid level and content ? If *YES*- press SEMI-AUTO then ORIGIN. If *NO*- remove and harvest manually (see 1c above).
	3. Press the button on Semi-Auto screen for the appropriate process to be re-started
	4. If indicated, select specific point in Process on sub-screen. Press ◄ button.=> Semi-Main screen
	5. Press START => Check tube condition screen
	6. Press START CHECKING. Make sure fluid levels are equal. Press NEXT as needed to complete process.
	7. Press and hold START for 5 seconds.

Written By: Director Approval:

(Signature and Date) (Signature and Date)

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Cytogenetic Supervisor