

# **ATP SWAB TESTS USING LUMITESTER PD-10 & LUCIPAC-W**



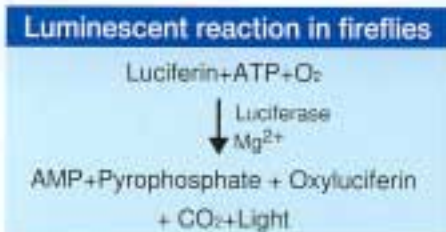
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# WHAT IS ATP ?

- Exist as energy source in all living things on earth
  - “Battery” for living things
- Evidence for living activity
  - During the Apollo program, the existence of living organisms were determined by the presence of ATP.
- Does not exist in non-living things

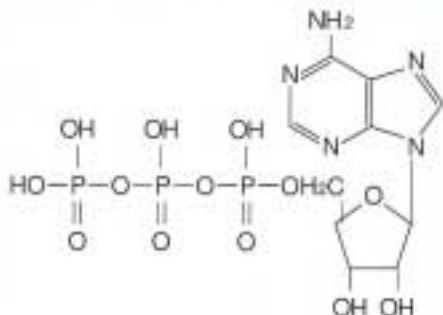


- ① Index for degree of cleanliness
- ② Rapid inference of quantity of microbes



## ATP (Adenosine triphosphate)

ATP is a compound found in all organisms on earth and serves as an energy source in all life



## Ultra High Sensitive Immunoassay System

Luciferase is used as a labeled enzyme for immunoassays. Assay sensitivity can be enhanced several hundreds to several tens of thousand times by utilizing an ATP-producing enzyme for labeling. Applications include tests for food bacteria as well as clinical diagnostic tests.

# APPLICATION OF PD-10 & LUCIPAC-W

## MERITS OF USING KIKKOMAN'S ATP SWAB TEST SYSTEM FOR HYGIENE MONITORING

1 DEGREE OF CONTAMINATION CAN BE NUMERICALLY EXPRESSED RAPIDLY ON SITE.

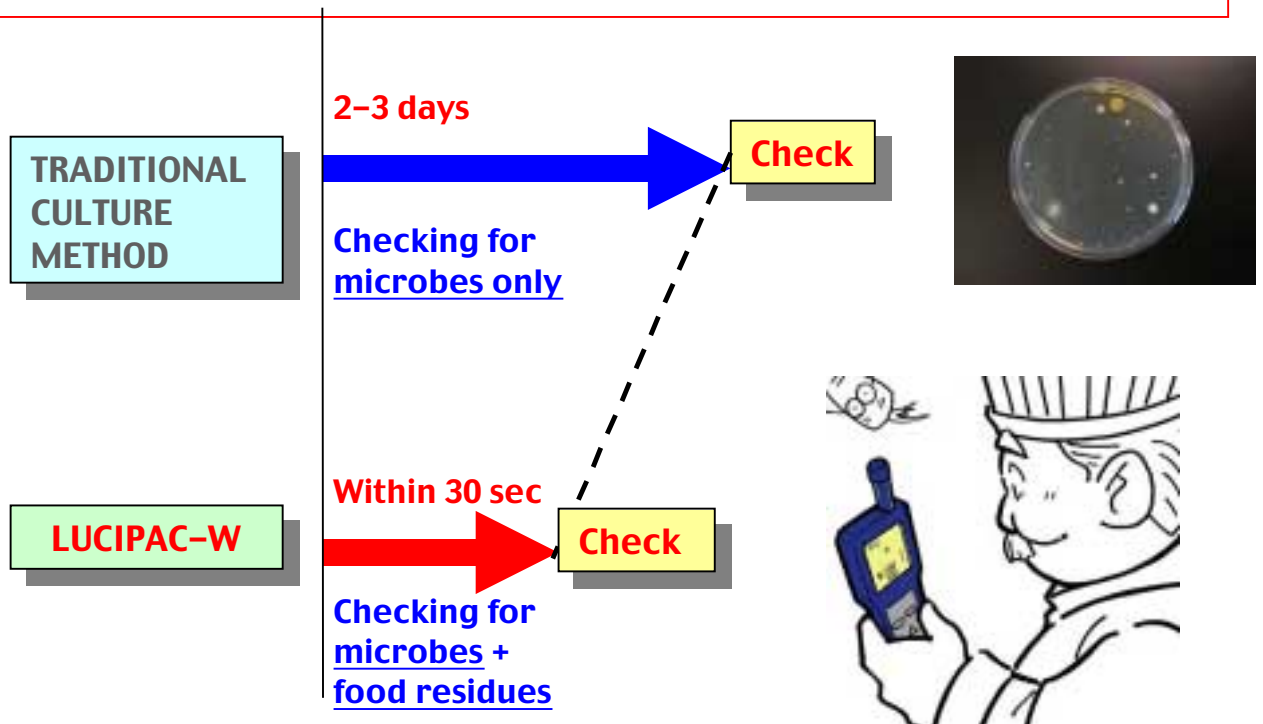
- ABLE TO KNOW RAPIDLY IF CLEANING IS INSUFFICIENT  
•RECLEANING POSSIBLE.
- HYGIENE MONITORING CAN BE DONE NUMERICALLY
- VERY SUITABLE AS ON-SITE INSTRUCTION TOOL

2 DETECTS NOT ONLY MICROORGANISMS BUT ALSO FOOD RESIDUE

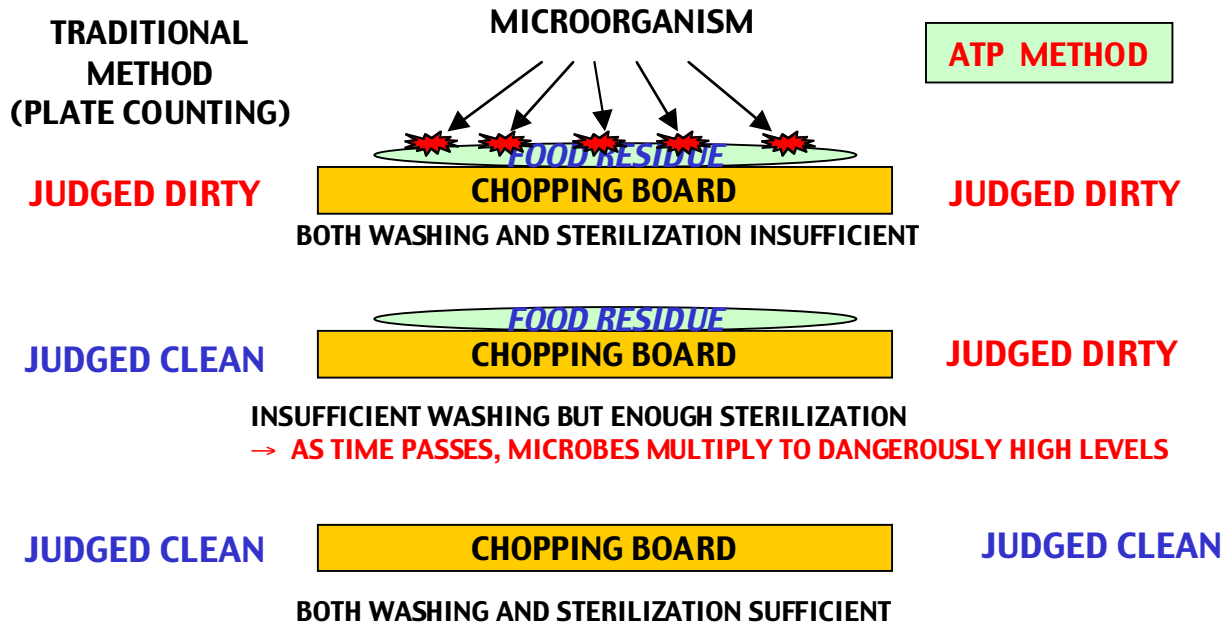


3 THE LIGHTEST PORTABLE LUMINOMETER IN THE WORLD

4 EASY TO USE



**POSSIBLE TO DETERMINE IF CLEANING IS SUFFICIENT USING ATP METHOD**



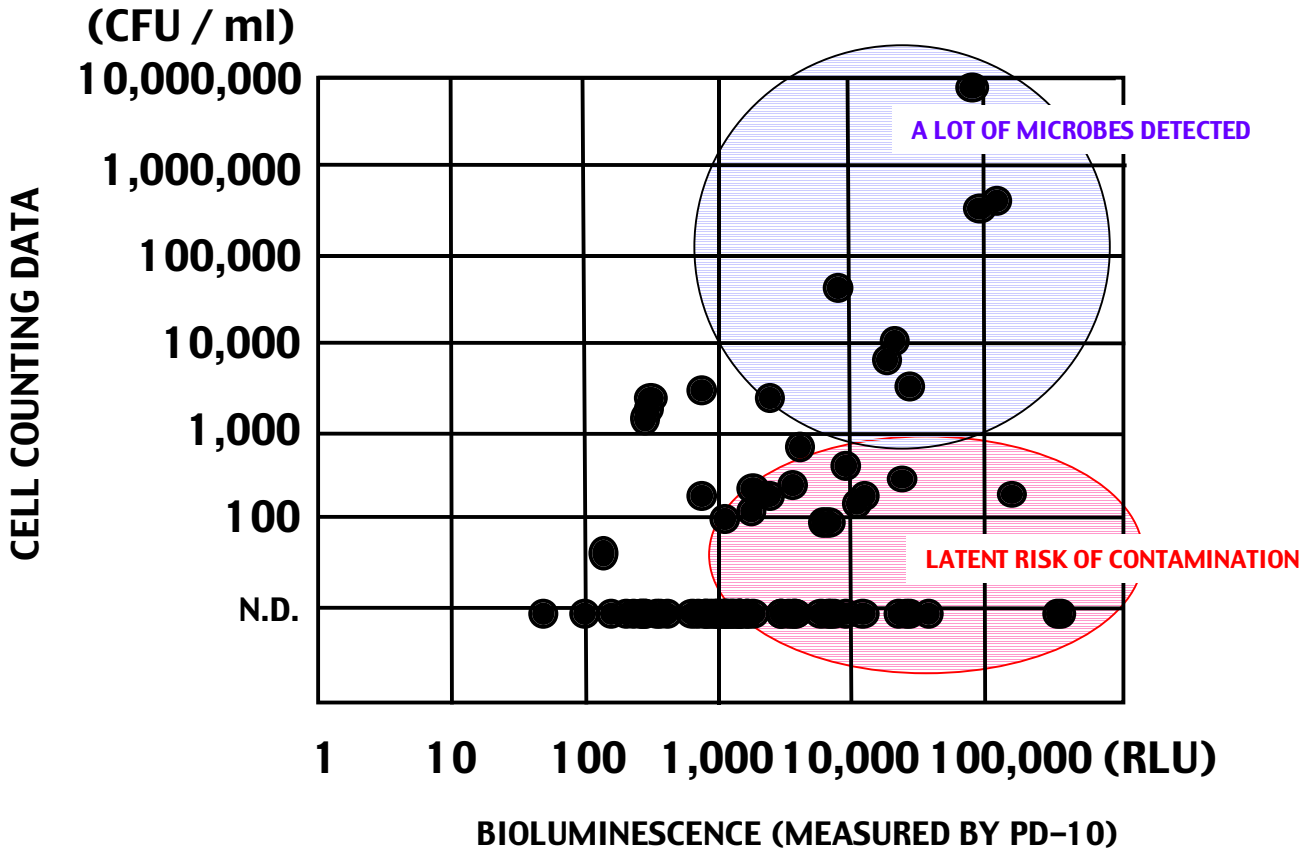
- WHEN FOOD RESIDUE REMAINS DUE TO INSUFFICIENT WASHING ...
  - BECOMES HOTBED FOR MULTIPLICATION OF MICROBES
  - BECOMES REASON FOR LOSS OF STERILIZATION EFFECT IN SOME CASES

**CAN THEREFORE BE CAUSE OF FOOD POISONING THROUGH SECONDARY CONTAMINATION**



**USE LUMITESTER PD-10 & LUCIPAC-W FOR EDUCATING STAFF ON HYGIENE MATTERS AND MONITORING HYGIENE CONDITIONS OF EQUIPMENT & FACILITIES, WHICH ARE GENERAL HYGIENE MONITORING CRITERIA AND ARE PRECONDITIONS FOR HACCP IMPLEMENTATION.**

**RELATIONSHIP BETWEEN RLU VALUES (FROM ATP SWAB TESTS) AND CELL COUNTS**  
 (EXAMPLE OF DATA FROM KITCHEN)



- POINTS WITH HIGH BIOLUMINESCENCE COINCIDE WITH POINTS WITH HIGH CELL COUNTS
- WITH ATP METHOD, IT IS POSSIBLE TO DETECT LOCATIONS WHERE FOOD RESIDUE IS PRESENT AS A RESULT OF INSUFFICIENT CLEANING, EVEN THOUGH FEW MICROBES MAY EXIST

**USING PD-10 & LUCIPAC-W, IT IS POSSIBLE TO MONITOR CLEANLINESS IN A RAPID AND EFFECTIVE MANNER**

## INTRODUCTION OF ATP SWAB TESTS USING LUMITESTER PD-10 & LUCIPAC-W

### STEP 1

#### CHOOSE POTENTIAL SAMPLING POINTS FOR CONDUCTING SWAB TESTS

- LOCATIONS WHERE CONTAMINATION WILL HAVE HIGH POSSIBILITY OF DIRECTLY AFFECTING FINISHED PRODUCTS, SUCH AS FILLING MACHINES AFTER HEATING, PACKING LINES ETC
- LOCATIONS THAT ARE NOT NORMALLY USED BUT ARE ONLY OCCASSIONALLY USED
- LOCATIONS WHICH ARE ESPECIALLY EFFECTIVE FOR STAFF EDUCATION
- OTHER LOCATIONS WHICH ARE DIFFICULT TO CLEAN AND ARE SOURCES OF CONCERN



### STEP 2

#### CHECK EXISTING CONDITIONS OF THE SAMPLING POINTS BEING CONSIDERED FOR SWAB TESTS

- USING LUCIPAC-W, CHECK THE CONDITIONS OF EACH POTENTIAL SAMPLING POINT AFTER CLEANING

## STEP 3

### DECIDING ON ACTUAL SAMPLING POINTS FOR SWAB TESTS, RECONSIDERATION OF CLEANING METHODS FOR PROBLEMATIC LOCATIONS.

- Decide the actual sampling points for swab tests. Choose important places such as filling nozzles or locations with high RLU readings (it is more practical to concentrate on 20 sampling points).
- Reconsidering washing methods for sampling points where RLU readings are always high
- Taking RLU readings again from sampling points where washing methods were changed

## STEP 4

### DECIDING THE STANDARD VALUES FOR SAMPLING POINTS SELECTED FOR SWAB TESTS.

- It is practical to conduct swab tests on 20 sampling points in one day.  
(Using the following table as reference , please create your own in-house standard values)

TEST POINTS	STANDARD VALUES (RLU)		1st Check Result (RLU)		Action	2nd Check Result (RLU)	
	Pass	Fail					
Hands	<3000	>6000	4000	B (CAUTION)	Advise	1600	A (PASS)
Fridge door knob	<2000	>4000	3000	B (CAUTION)	Reclean	1500	A (PASS)
Sink	<2000	>4000	640	A (PASS)	Reclean	26	A (PASS)
Vat	<200	>400	100	A (PASS)			
Beer Server	<2000	>4000	1500	A (PASS)			
Cutting board	<500	>1000	2500	C (FAIL)		1500	C (FAIL)
Knife	<500	>1000	250	A (PASS)			
Bowl	<200	>400	250	C (CAUTION)			
Weighing scale	<200	>400	1000	C (FAIL)	Reclean	180	A (PASS)

## STEP 5

### ACTUAL DETERMINATION OF CLEANLINESS USING LUCIPAC-W

**References:**

- ATP Swap Tests Research Group
- The role and practice of ATP swap tests in HACCP
- Food and Development Vol. 35 No. 8, P38-43