A New generation of hygiene monitoring

LuciPac A3

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What's ATP（Adenosine TriPhosphate）?

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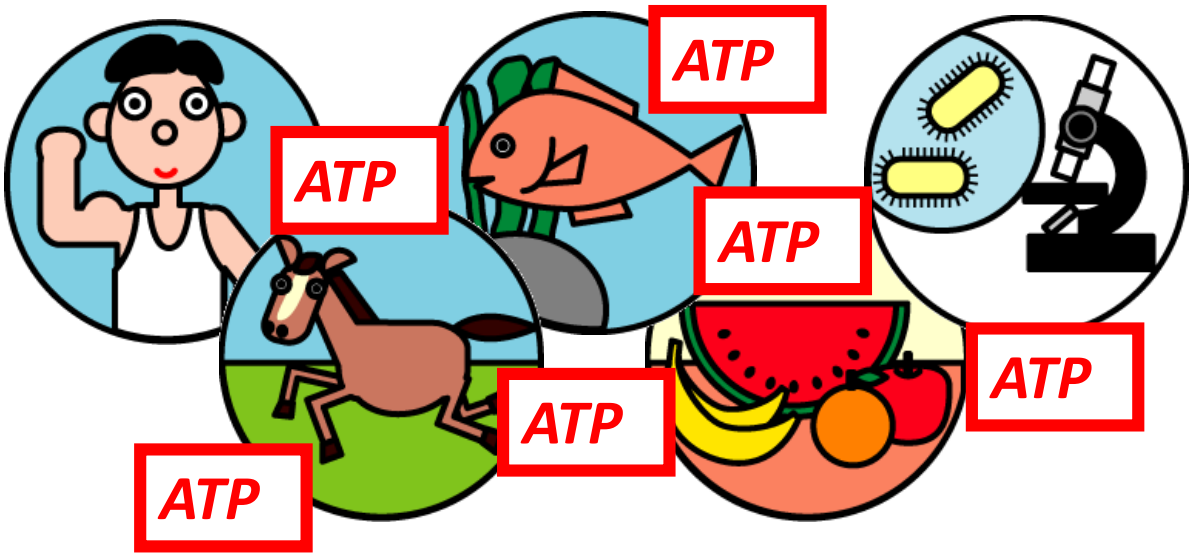
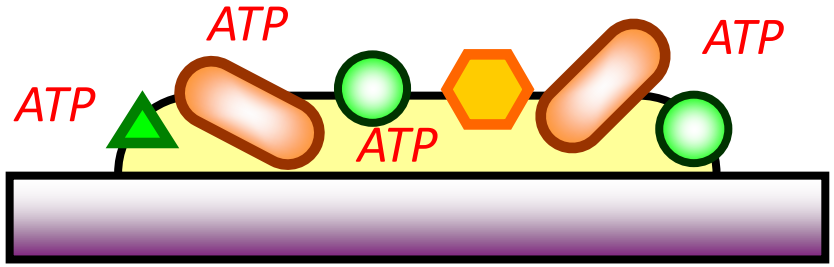
ATP is the universal energy molecule found in all living things.



Food Residues | **Microorganisms**



ATP is an indicator of uncleanness and cleaning efficacy.

ATP Rapid Hygiene Monitoring

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・Invisible uncleanness can be quantified in “Anytime”, “Anywhere” and by “Anyone” in 30 sec.

- Uncleanness record management
- Enhancing employee’s awareness of hygiene

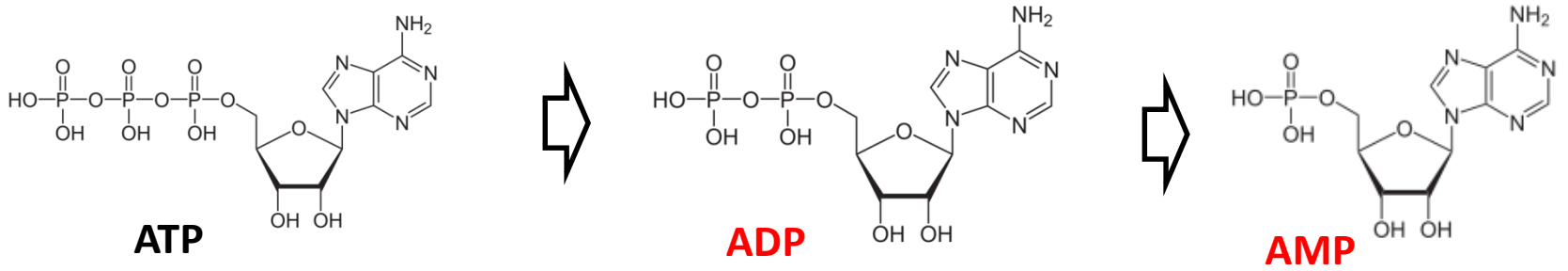
・Risk for both food poisoning and allergen contamination can be checked at the same time.




ATP Hygiene Monitoring

ATP: Adenosine triphosphate

- ✓ATP is a molecule found in all living cells and serves as an indicator of overall surface hygiene and cleaning efficacy
- ✓ATP is easily converted into ADP and/or AMP by biological metabolism or by decomposition at high temperature and pH



Decomposition of ATP derivatives

Why A3 assay (ATP+ADP+AMP)?

A3 detects ATP+ADP+AMP offering higher sensitivity to find microorganisms and biofilms that others miss. Just as fast and easy to use as conventional tests, but its advanced chemistry produces superior detection to uncover contaminants that you may be missing.

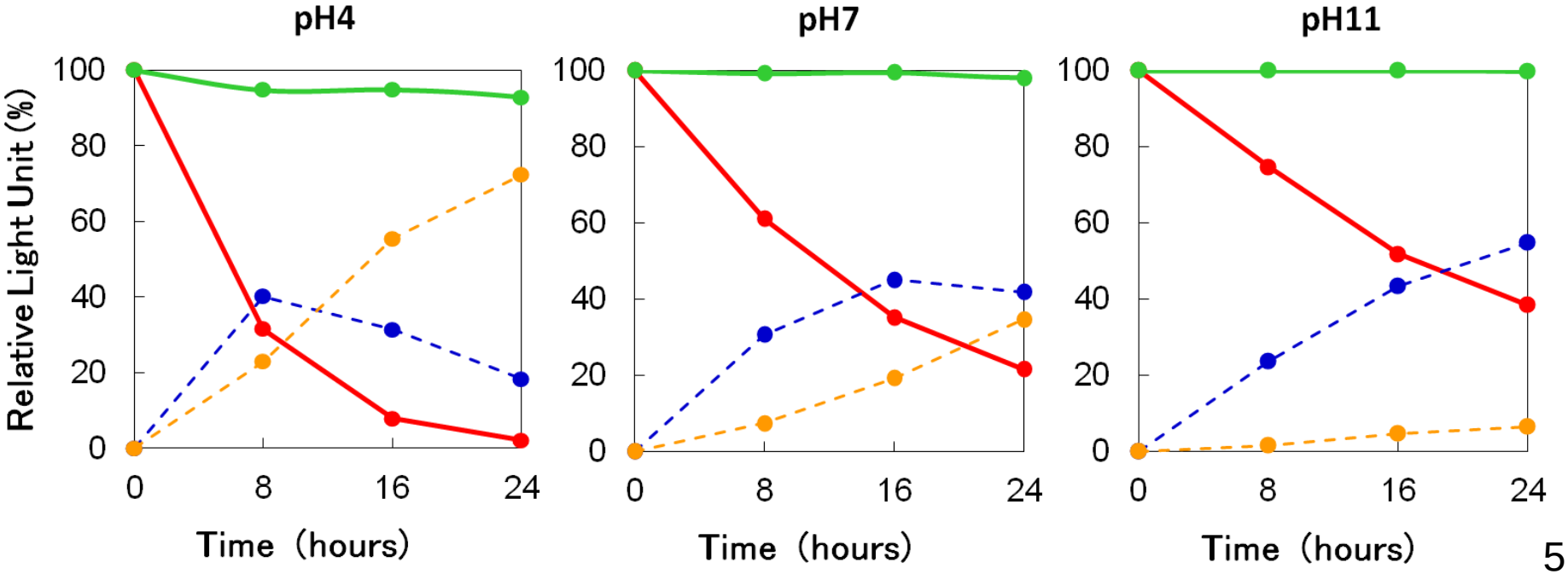
Stability of ATP

- ✓ ATP is easily decomposed into ADP and AMP
- ✓ A3 assay provides consistent results and high sensitivity

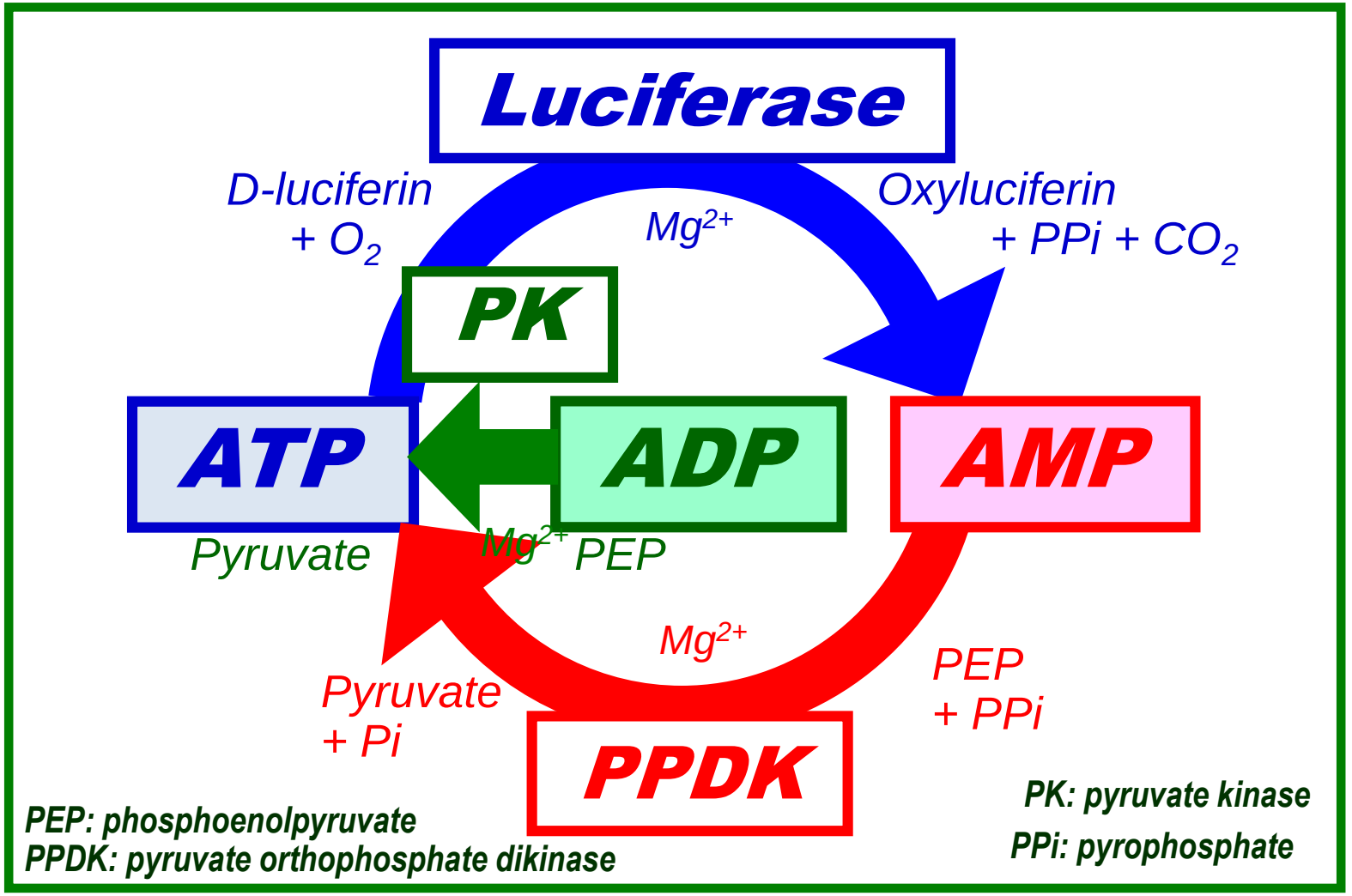
Storage condition : 80 ºC (176 ºF)

Detection :

- ATP
- ADP
- AMP
- A3 assay (ATP+ADP+AMP)



Recycling A3 assay by Kikkoman Technology



Players on ATP Hygiene Monitoring Test

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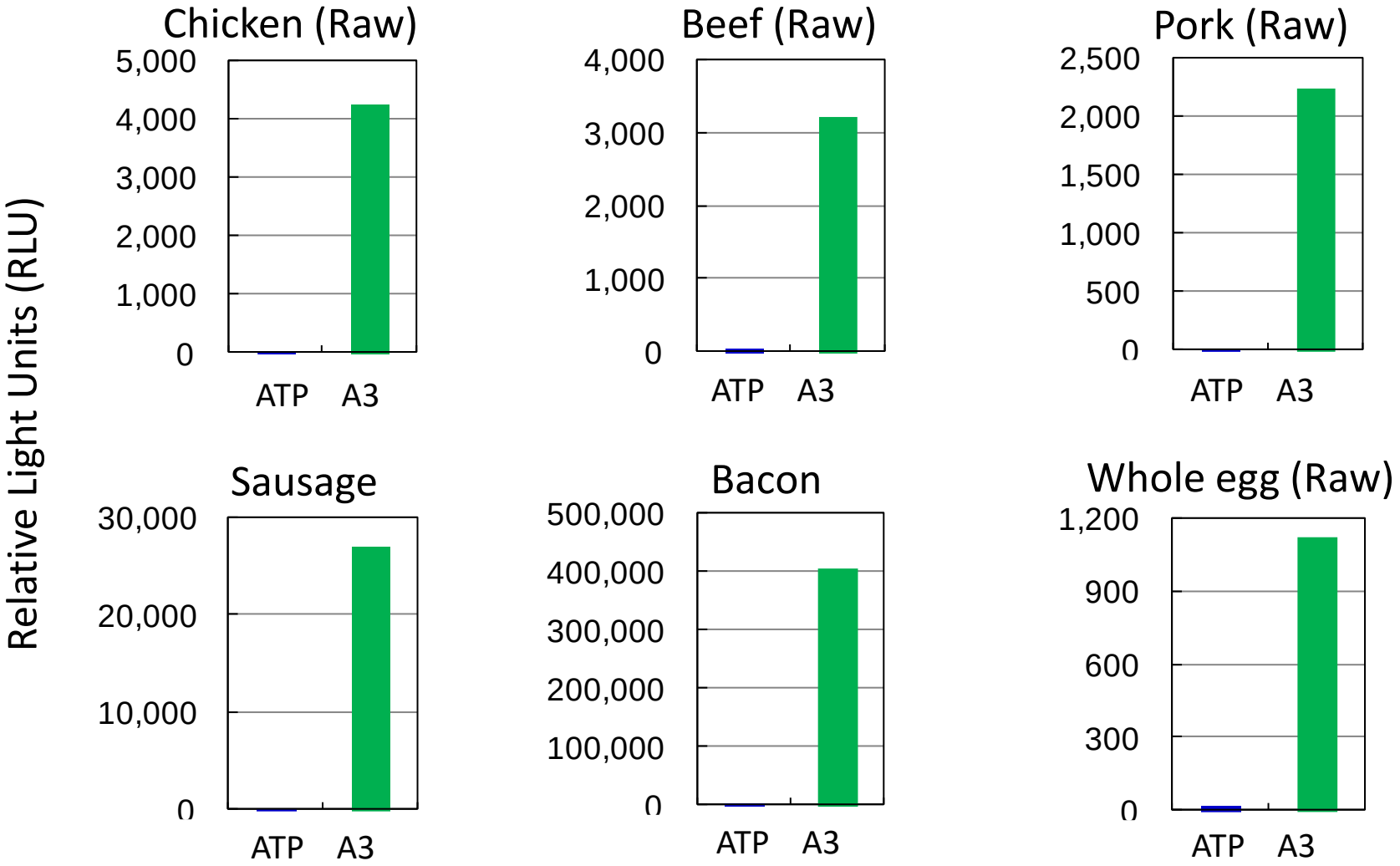
- ✓ All players except for Kikkoman detect ATP alone
- ✓ A3 is able to detect all ATP derivatives (ATP+ADP+AMP)

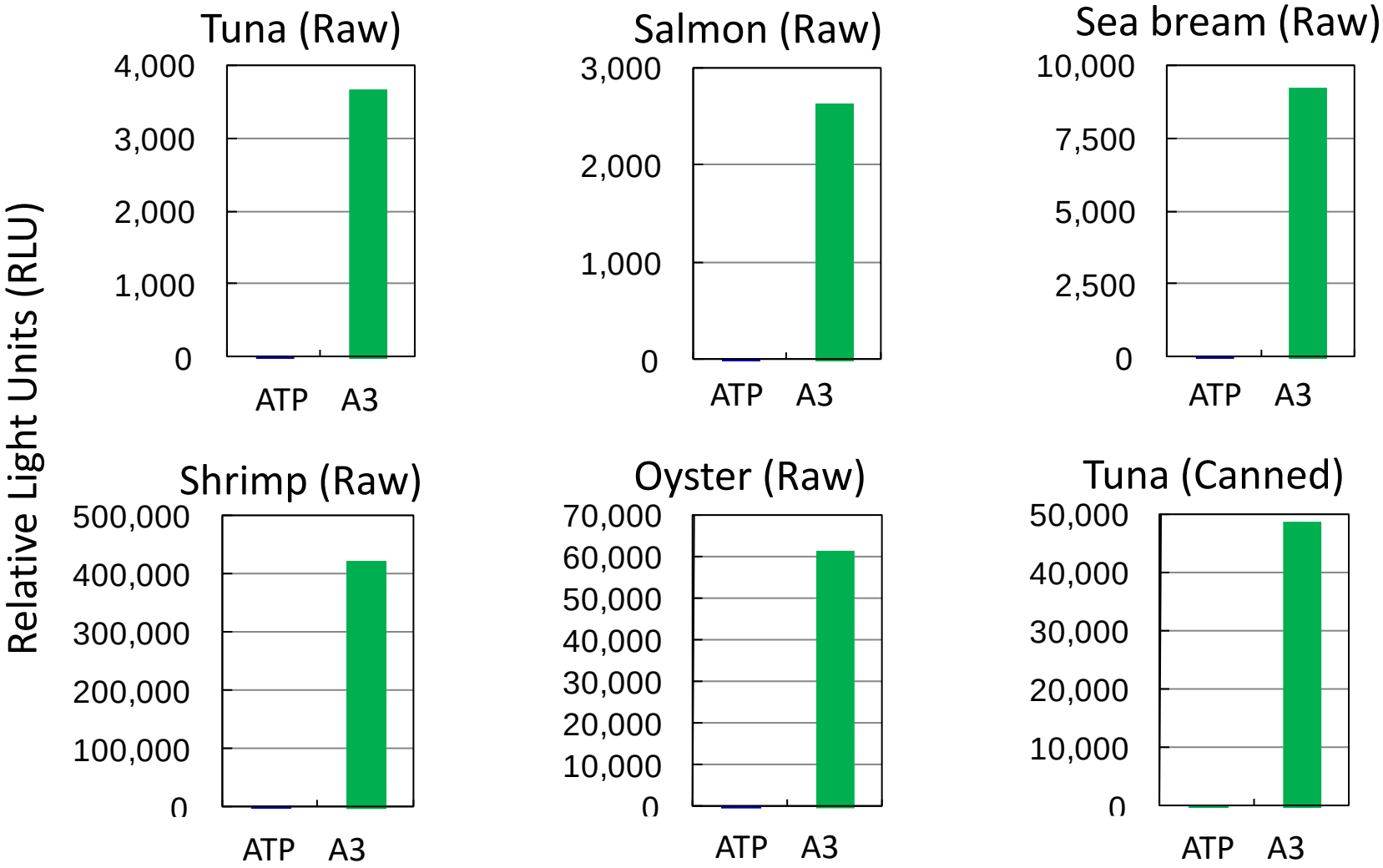
	Kikkoman	3M	Hygiena	Neogen	Charm	BioControl
Instruments						
Devices						
Detection Targets	ATP +ADP +AMP	ATP	ATP	ATP	ATP	ATP

ATP vs A3 ~Meat and Egg~



A3 is a good index of meat & egg residues

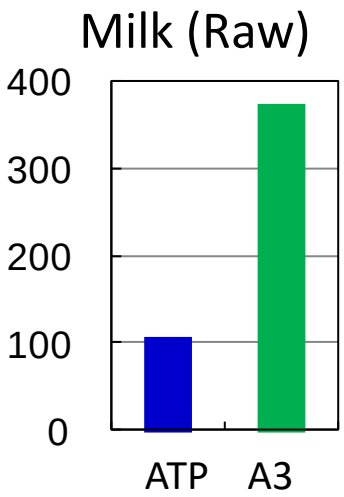
ATP vs A3 ~Seafood~

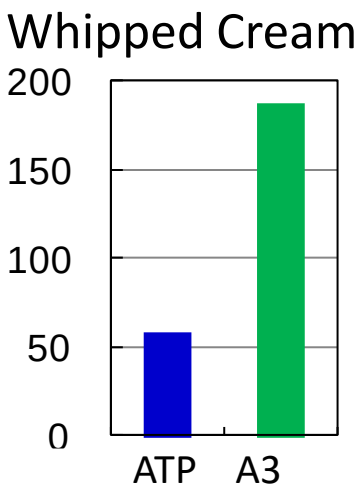


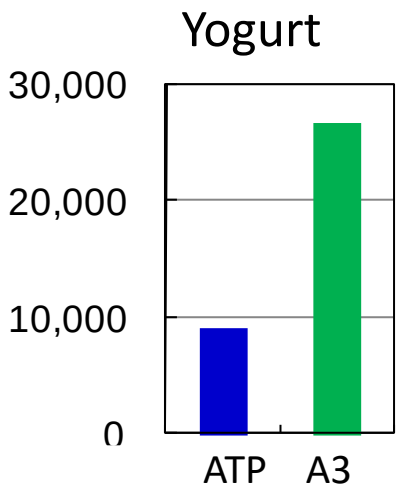
A3 is a good index of seafood residues

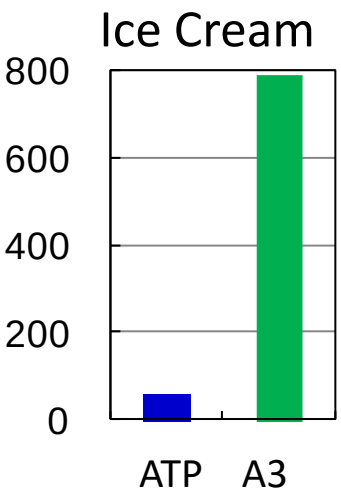
ATP vs A3 ~Dairy~

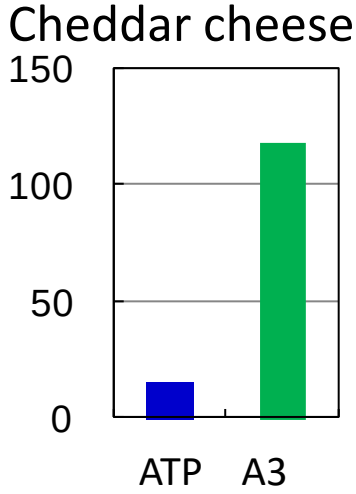
Relative Light Units (RLU)

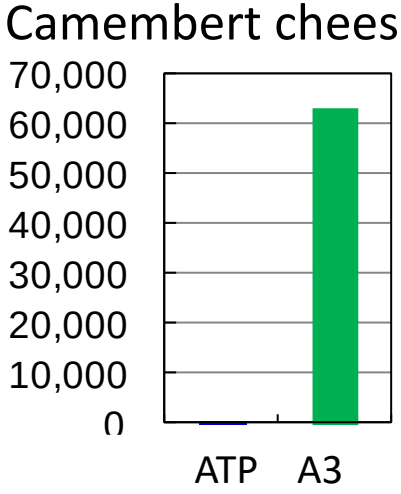






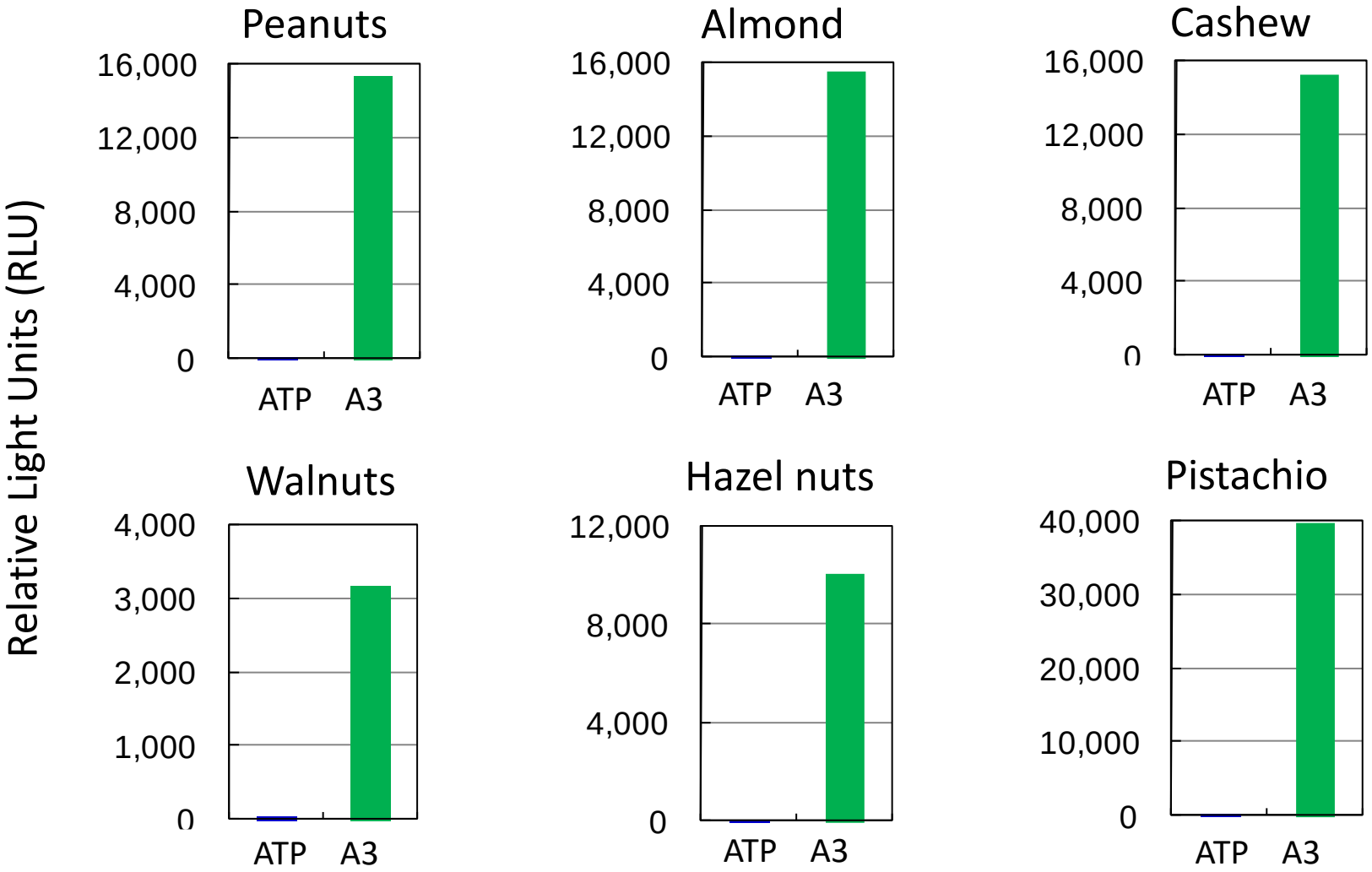






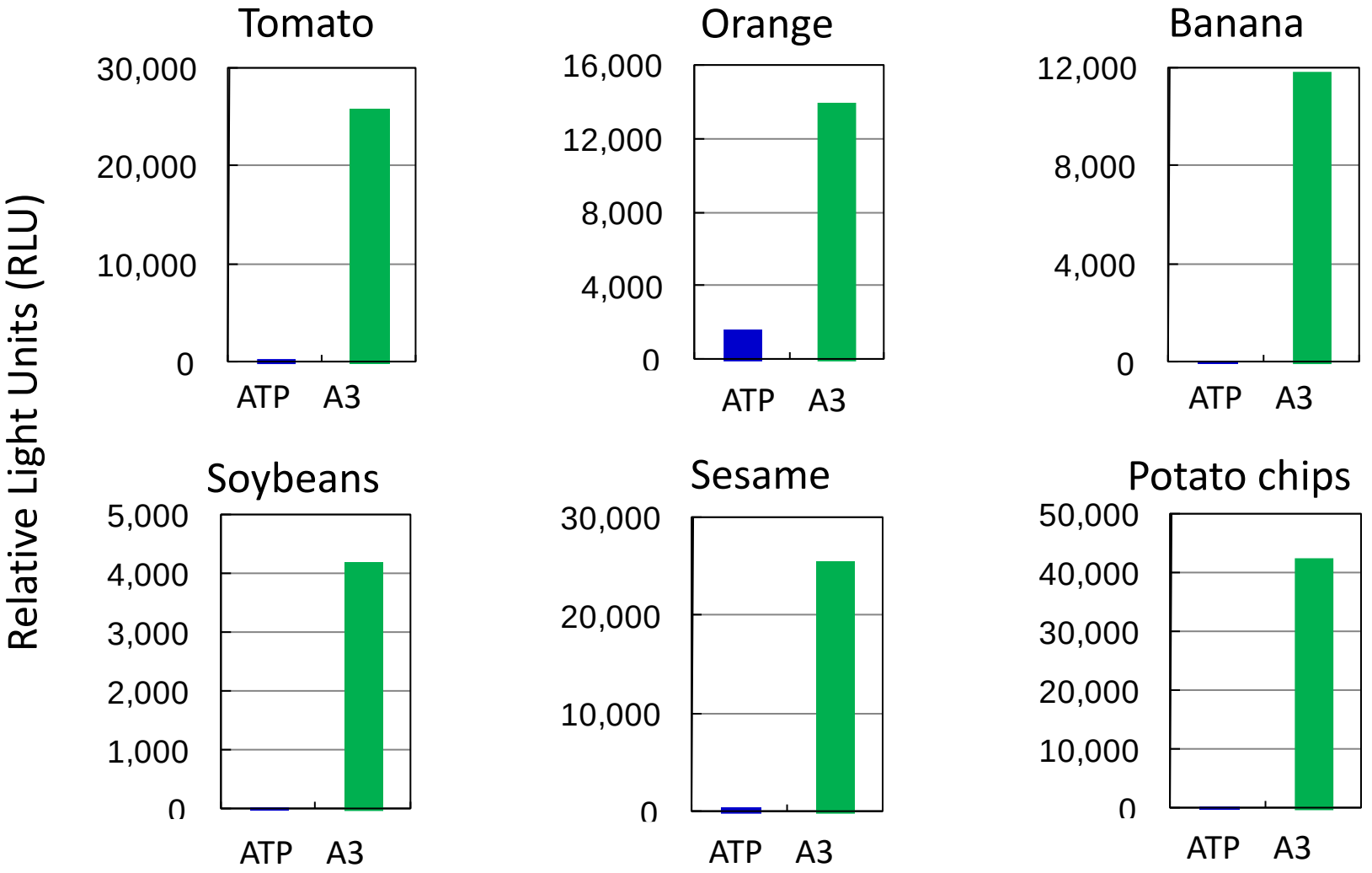
A3 is a good index of dairy residues

ATP vs A3 ~Nuts~



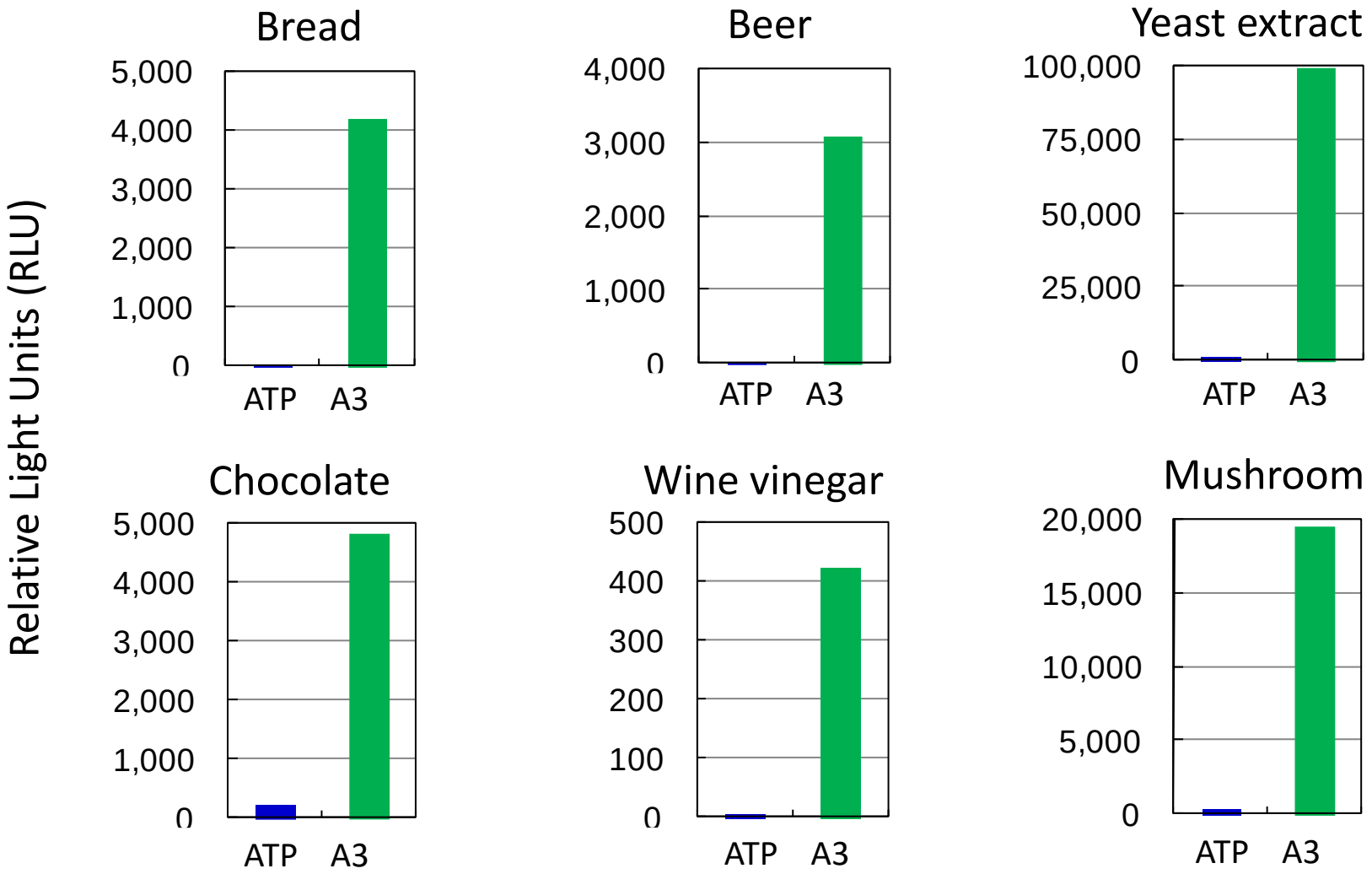
A3 is a good index of nuts residues

ATP vs A3 ~Fruits & Vegetables~



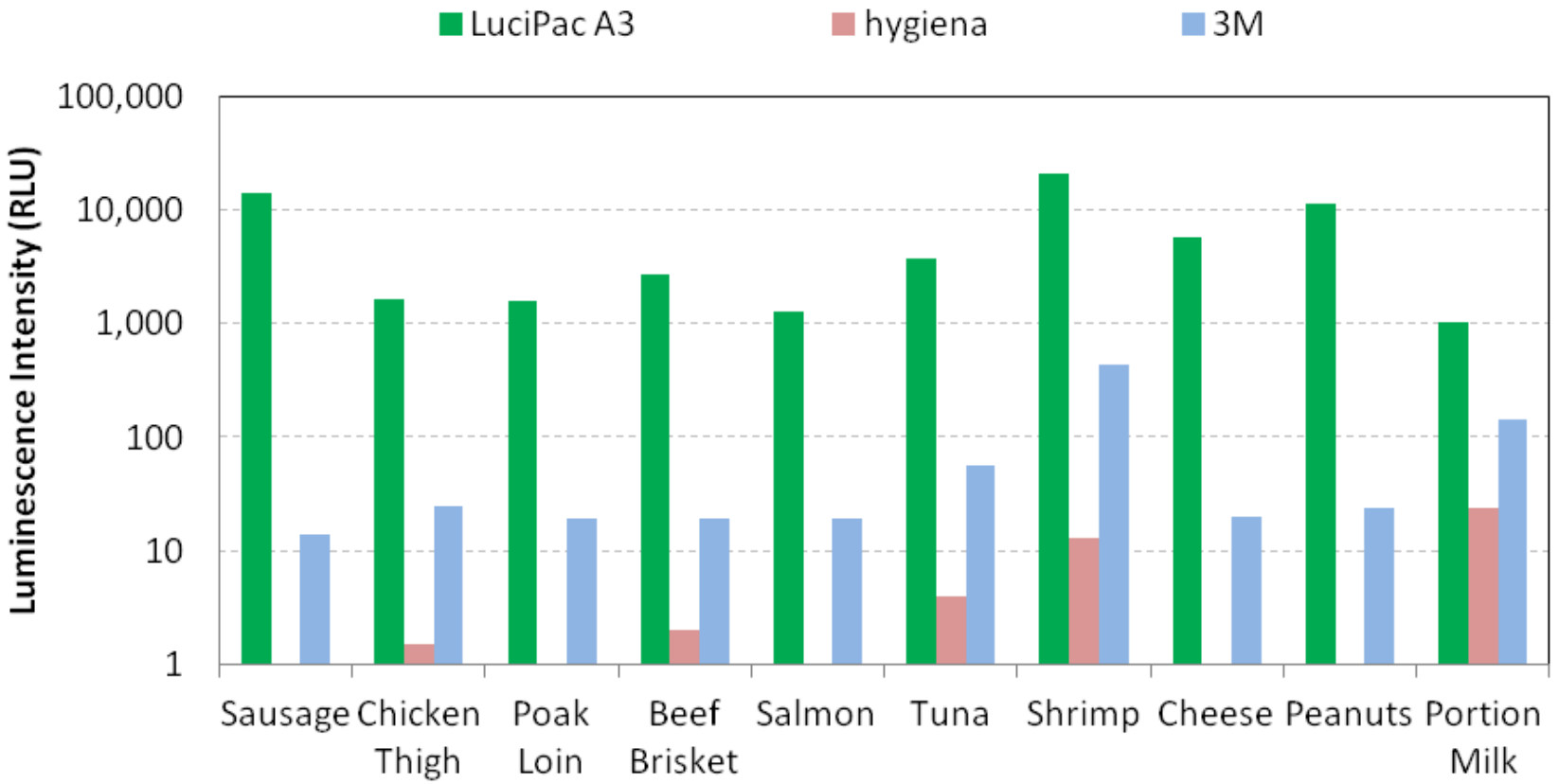
A3 is a good index of fruits & vegetables residues.

ATP vs A3 ~Fermented foods & fungi~



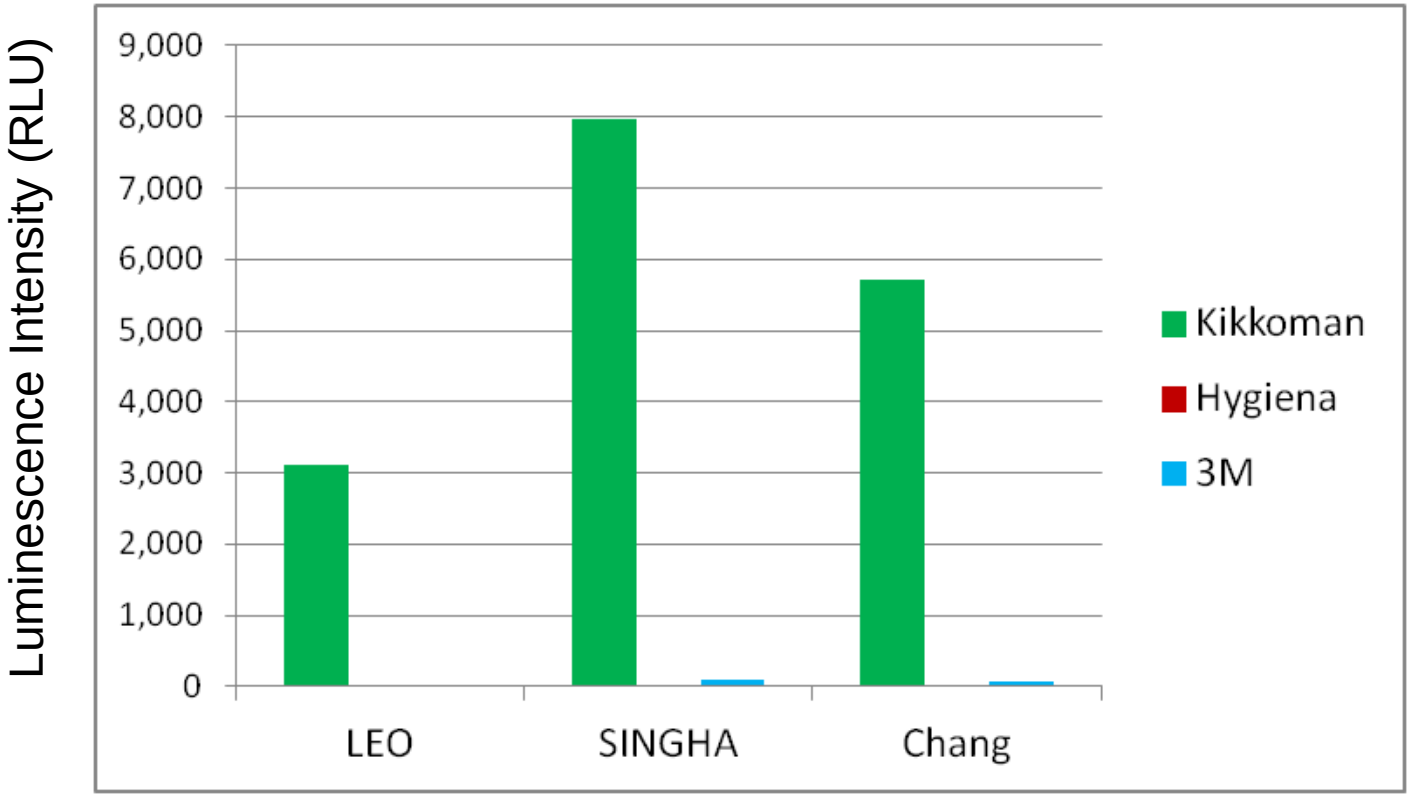
A3 is a good index of fermented foods & fungi residues.

Kikkoman A3 vs. Hygiena vs. 3M in food



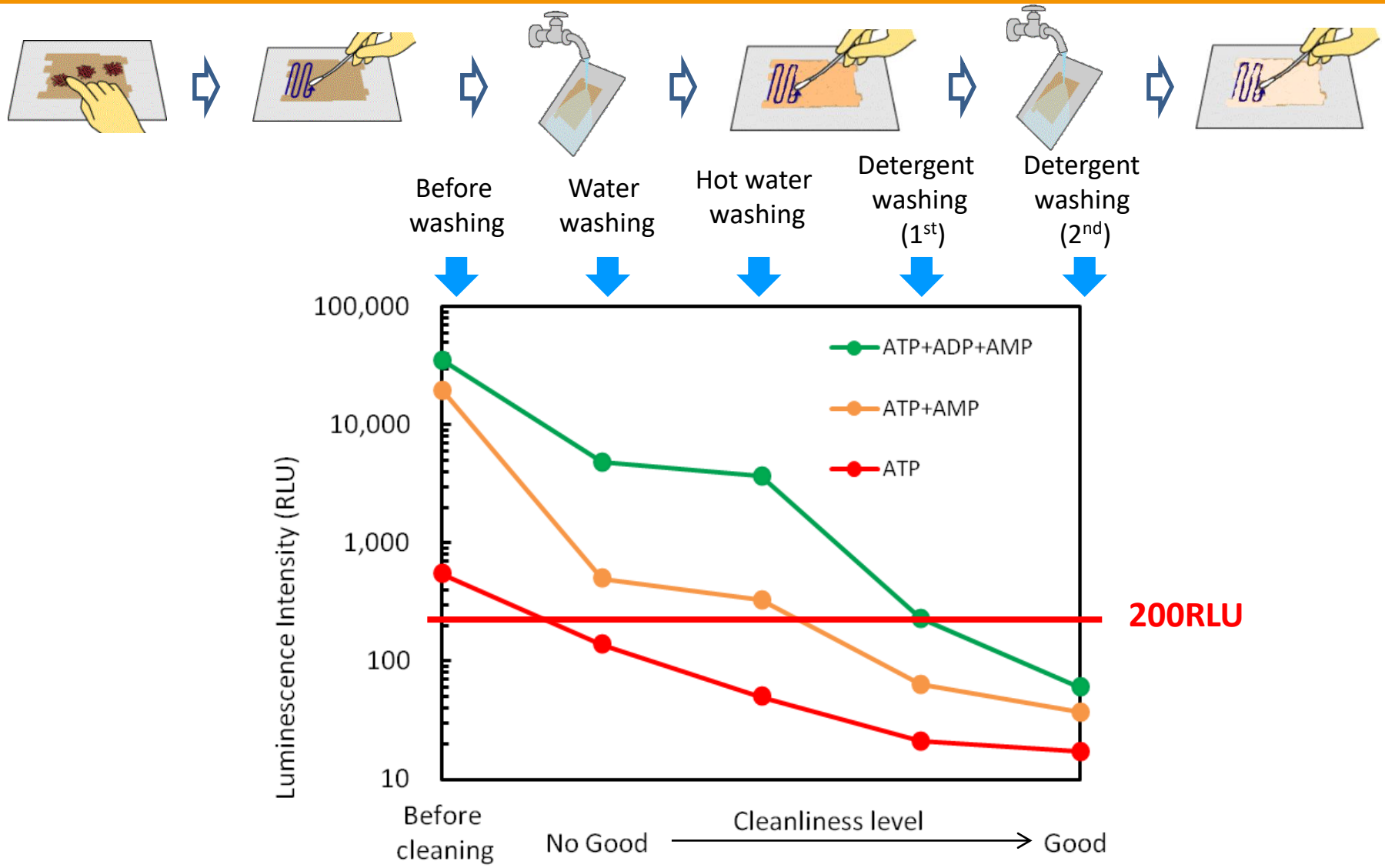
Data shows A3 has higher sensitivity
on detection of food residue than either Hygiena or 3M

A3 vs. Hygiena vs. 3M in Thai Beer



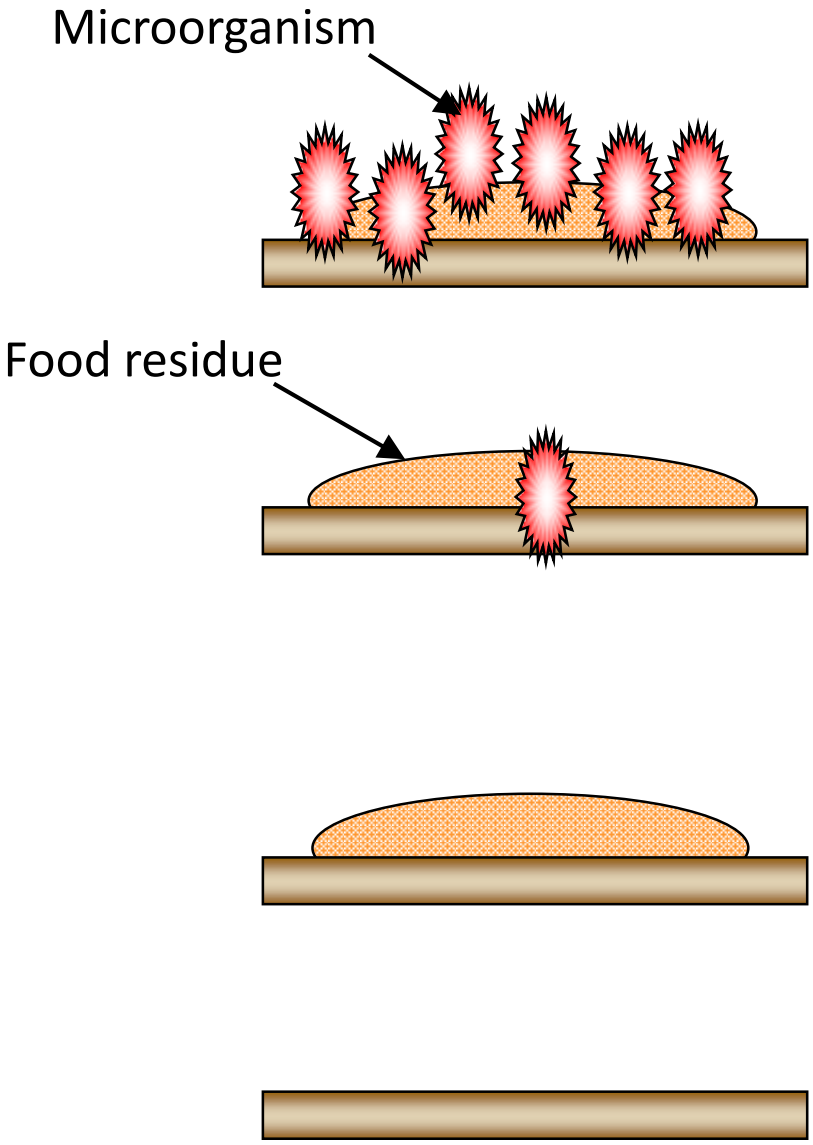
Data shows A3 has higher sensitivity to beer than either Hygiena or 3M

Sanitation verification by ATP, ADP, and AMP



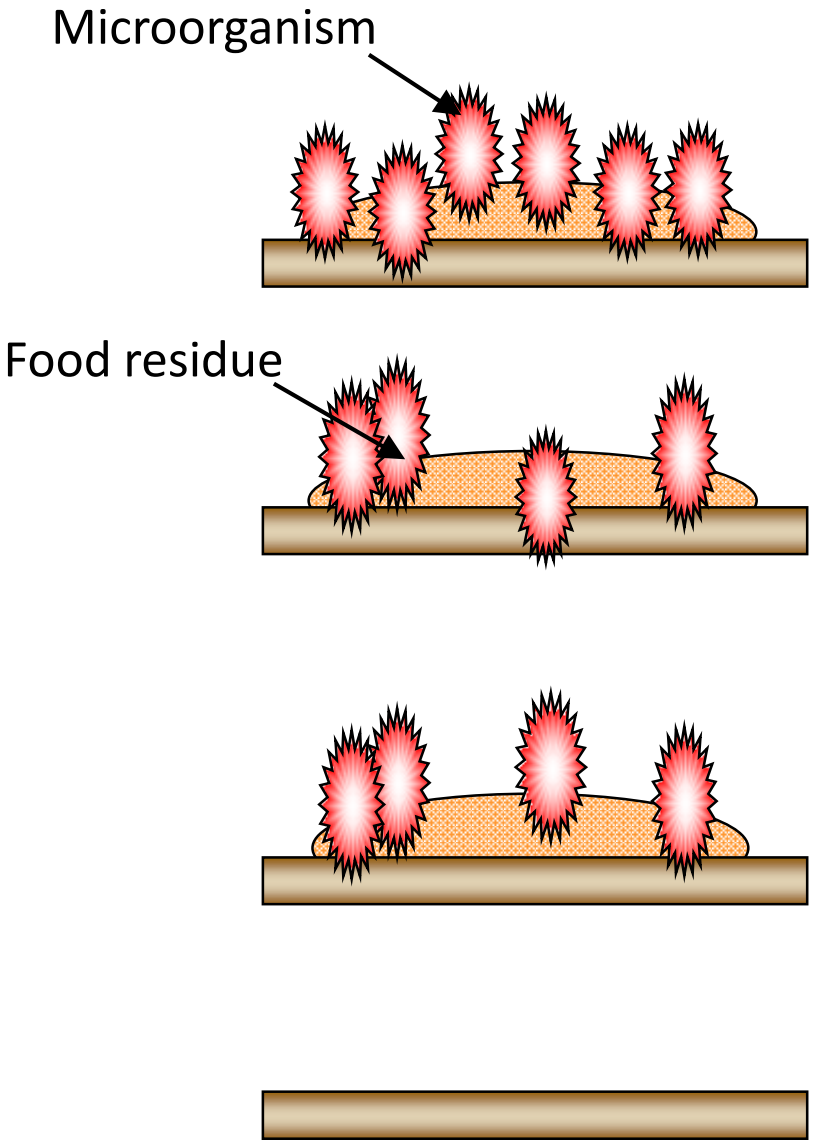
Detection of ATP alone is not enough for sanitation monitoring

Superiority of A3



ATP	A3
Excellent	Excellent
Fair	Excellent
Fair	Excellent

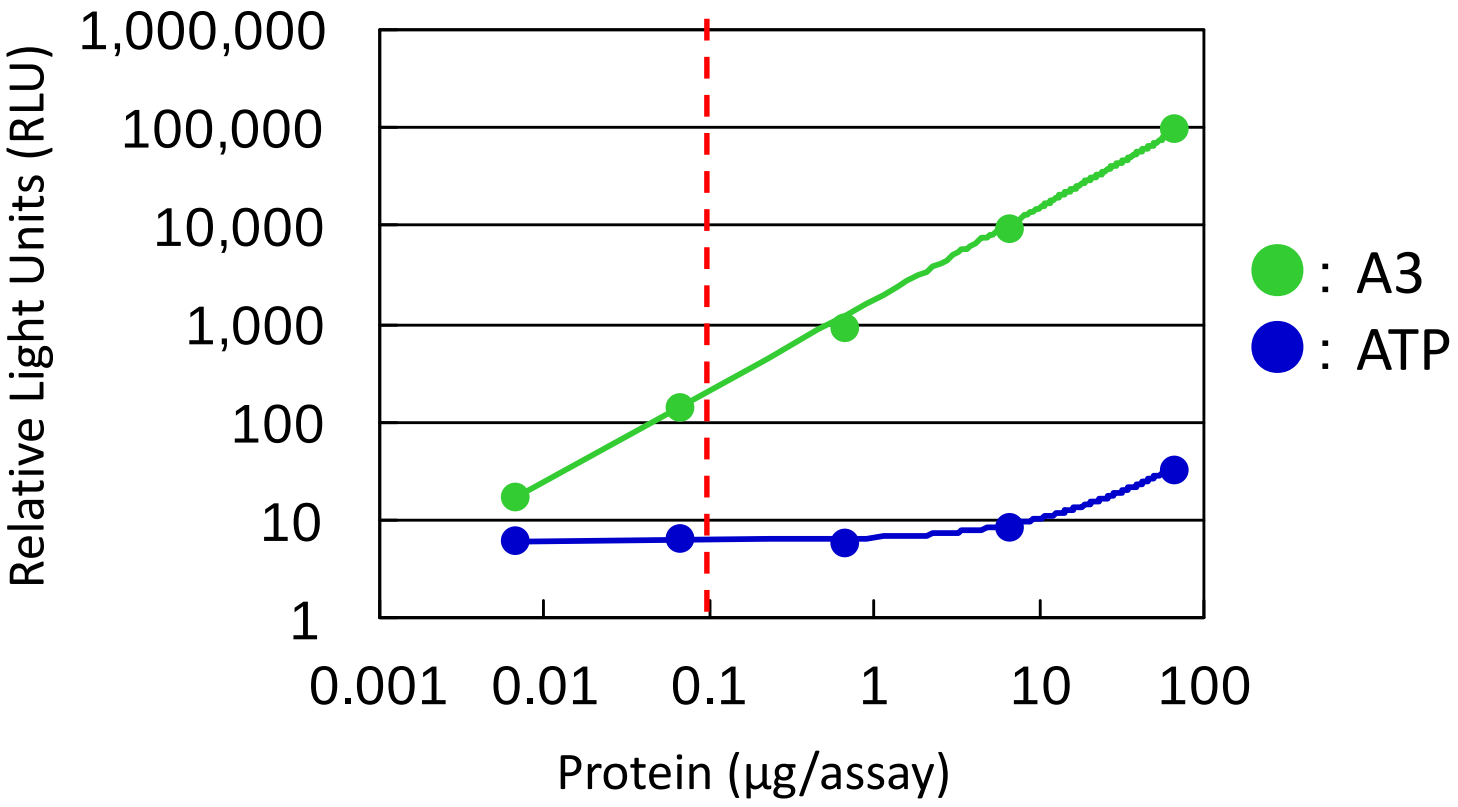
Superiority of A3



ATP	A3
Excellent	Excellent
Fair	Excellent
Fair	Excellent

A3 can also detect breeding ground of bacteria

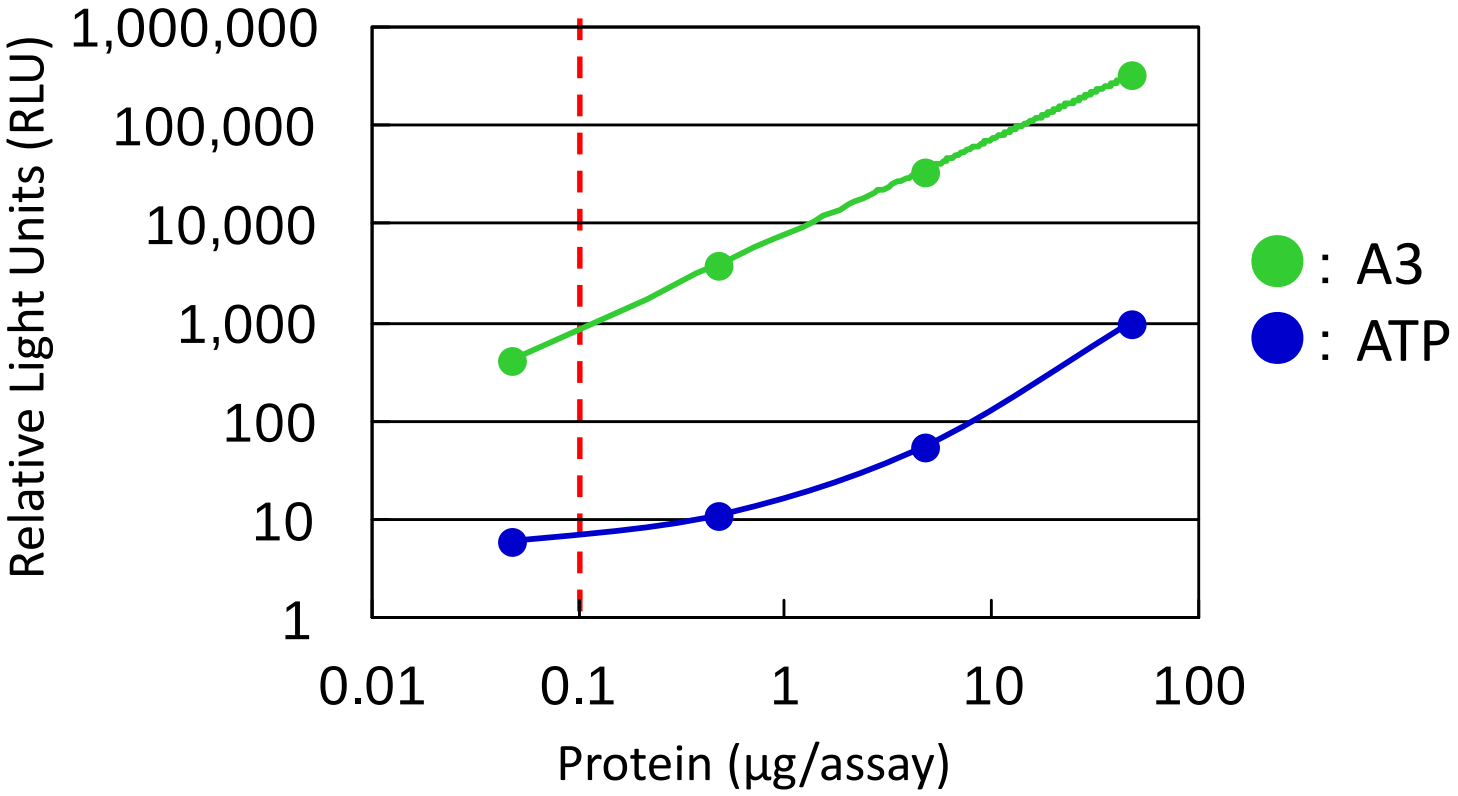
A3 vs Protein assay ~Peanuts~



LOD of Bradford Protein assay : 0.1 µg

The sensitivity of A3 method for peanuts was equal to or better than that of protein assay.

A3 vs Protein assay ~Shrimp~



LOD of Bradford Protein assay : 0.1 µg

The sensitivity of A3 method for shrimp was better than that of protein assay.

Chemicals in samplers

- ✓ Unwanted chemicals are contained in many products or on swabs, which can cause trace surface contamination, but A3 uses a dry swab that contains no trace contaminants

Kikkoman	3M	Hygiena	Neogen	Charm	BioControl
None (dry swab)	Chlorhexidinedigluconate Humectant (SDS info)	Benzethonium Chloride (SDS info)	Does not contain any hazardous substances at the concentration limits given in Regulation(EC) No.1272.2008 and OSHA HazCom Standard 29 CFR 1910.1200 (SDS info)	No show (but pre-moisten)	Biofilm breaking agent (leaflet info)

Conclusion

- ✓ ATP is easily decomposed into ADP/AMP
  Assays that rely on ATP alone can produce false negatives for surface cleanliness

- ✓ A3 assay (ATP+ADP+AMP) detects more – providing high sensitivity and more accurate sanitation verification

- ✓ LuciPac A3 is sensitive enough for allergen monitoring programs, incl. nuts and eggs

- ✓ A3 does not leave trace chemical contamination

Hygiene monitoring device

ルシパック™ A3 Surface

LuciPac™ A3 Surface

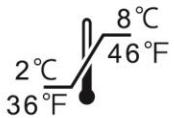
Code 60361

for Lumitester™ PD-20/PD-30

100 tests

20×5 bags

4 549160 985162



要冷蔵

LOT indicated at bottom of aluminum
アルミ袋下端に記載

Kikkoman Biochemifa Company
2-1-1,Nishi-Shinbashi,Minato-ku,
Tokyo 105-0003,Japan
Phone: +81 3 5521 5492 Fax: +81 3 5521 5498
E-mail: biochemifa@mail.kikkoman.co.jp
URL: http://biochemifa.kikkoman.co.jp/e

Hygiene monitoring device

ルシパック™ A3 Water

LuciPac™ A3 Water

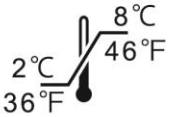
Code 60365

for Lumitester™ PD-20/PD-30

100 tests

20×5 bags

4 549160 985193



要冷蔵

Do not freeze
凍結厳禁

LOT indicated at label of aluminum bag
アルミ袋ラベルに記載

mind package insert
取扱説明書参照

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E-mail: biochemifa@mail.kikkoman.co.jp
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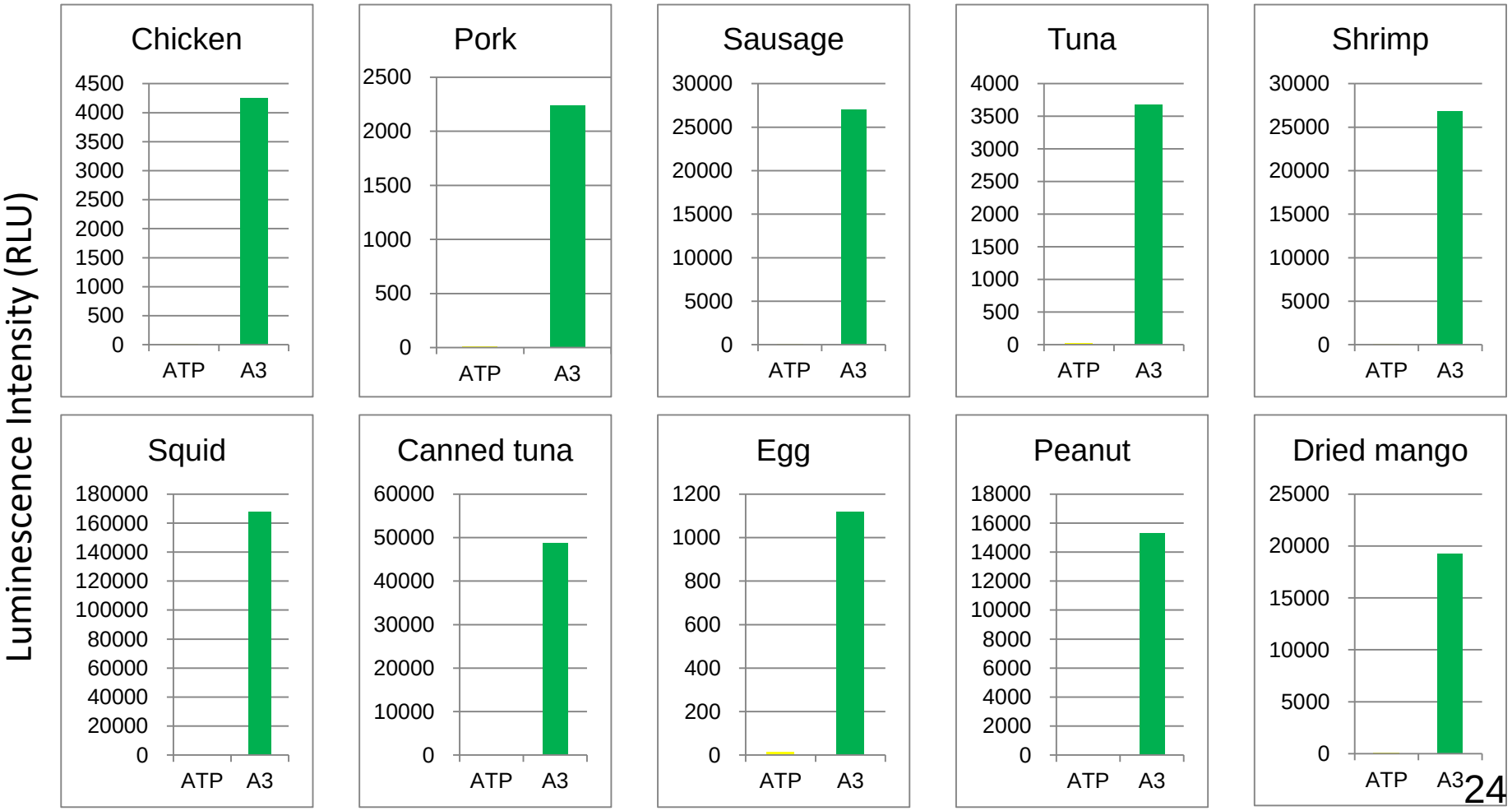
〒105-0003 東京都港区西新橋2-1-1
TEL:03-5521-5490 Fax:03-5521-5498

ATP and A3 detection in food products

- ✓ Conventional ATP tests do not detect many food products
- ✓ High Sensitivity LuciPac A3 shows a high level of detection



ATP and A3 detection in beverages

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- ✓ LuciPac A3 is more sensitive in beverage detection