Excellent SYBR® Safe Detection by Blue / White Light Transilluminator

INTRODUCTION

Blue light source was regarded as safer light source rather than UV light toward nucleic acid samples and also less harmful toward human body. Both epi- and trans- blue light source are widely applied among the bio-safe imaging applications. Designed according to Multi-Inner-Reflection principle, newly launched BW-20 blue and white light transilluminator equipped with the most energy saving and uniform distribution LED illumination system. It is the best choice for bio-safe staining reagent applications and applicable in whole series of gel imaging systems. As using of BW-20, there is no reflection interference, and it can provide the most uniform light source distribution which traditional epi-light box can't provide. SYBR® Safe stained agarose gel was taken as a model to illustrate the difference in this article.

MATERIALS

- KETA ML imaging system (Wealtec)
- KETA S (Wealtec)
- SYBR® Save (Life Technology)
- 100 bp DNA marker(MDBio)

PROCEDURES

- Dilute the 100 bp DNA marker with 450 µL 10% glycerol in 0.5 x TAE buffer.
- Prepare 1.2 % 0.5x TAE agarose gel with 5 µL SYBR Safe stock in 50 mL 0.5x TAE buffer.
- Load 100 bp markers into agarose gel with the following amount:
  Lane 1 to 10: 8, 7, 6, 5, 4, 3, 2, 1, 0.5, 0.25 µL.
- Run the DNA samples with 70 V in agarose gel for 70 minutes.
- Observe the result with KETA S imaging system through the orange filter or WK101 filter.

RESULT

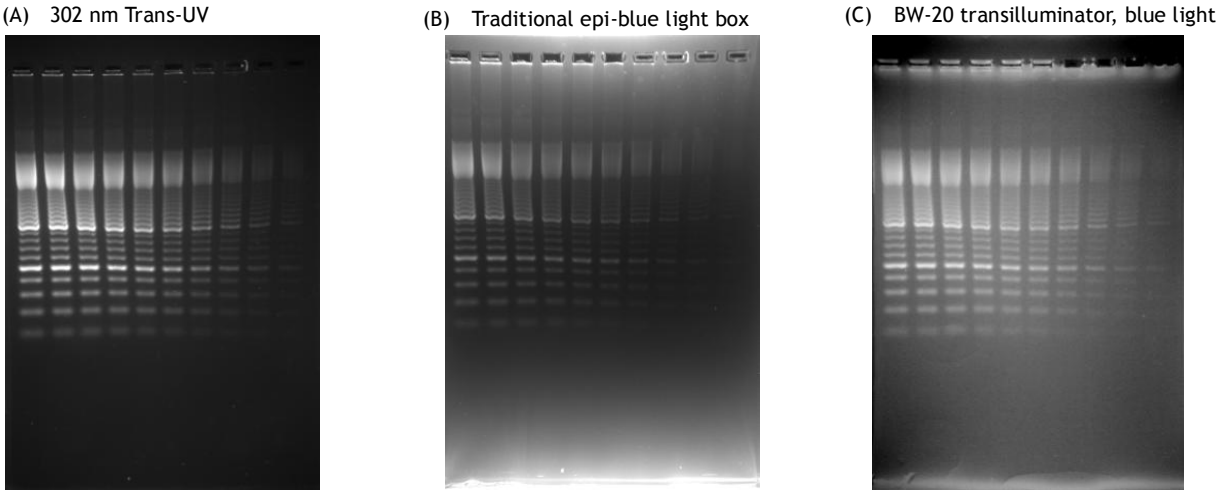

Figure 1. *SYBR® Safe stained agarose gel observation in KETA S system.*
Observed through (A) 302 nm Trans-UV with WK101, (B) traditional epi-blue light box with orange filter, and (C) blue light of BW-20 transilluminator with orange filter.

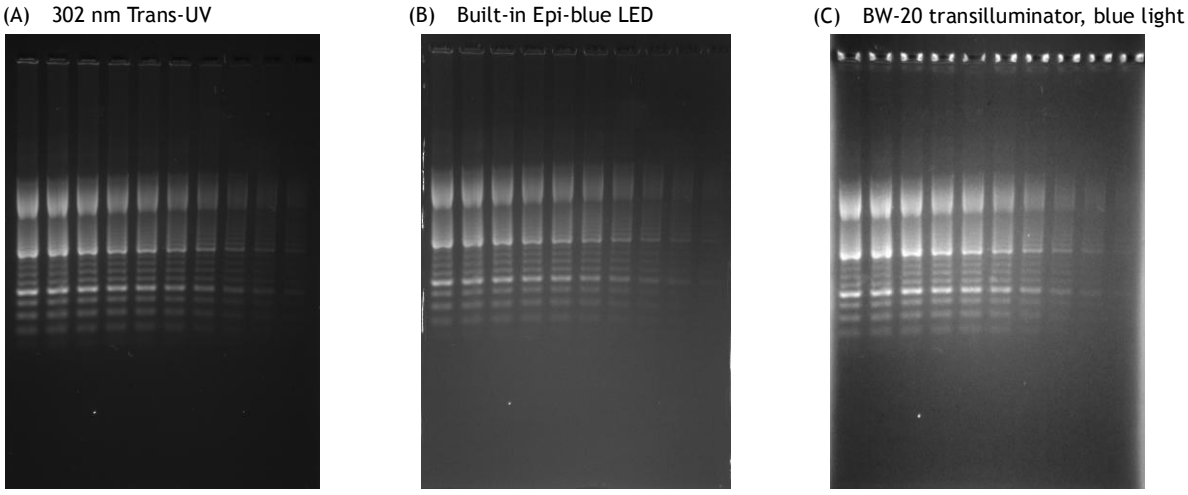

Figure 2. *SYBR® Safe stained agarose gel observation in KETA ML system.*
Observed through (A) 302 nm Trans-UV with WK101, (B) Built-in epi-blue LED light with orange filter, and (C) blue light of BW-20 transilluminator with orange filter.

DISCUSSION

According to the excitation and emission profile, SYBR® Safe nucleic acid dye have excitation/emission profile with 280, 502/530nm. User can get the strongest signal by using blue LED to excite. Although using of UV transilluminator can have clear result without background interference, it takes 2 ~ 3 seconds exposure time to observe. However, it takes less than 0.5 seconds exposure time by using of blue light excitation. Besides, blue light is a safe light source that will not cause the sample degradation but UV light will. When compare the result in picture (A) and (C) in both figure 1 and 2, they both have the same detection limit when using the same agarose gel. It was proved that detect of SYBR® Safe signal through BW-20 can have the same result as UV transilluminator.

Comparing of picture (A) with (B) in figure 1, using of the traditional epi-blue light box, it would be difficult to quantify the sample as the sample signal was not evenly excited. As picture (C) in both fig. 1 and 2, they're easy to see BW-20 provides more uniform transparent light intensity which makes the quantification result precisely.

Blue / White light transilluminator is recommended to be used for Bio Safe applications since it has similar detection result with UV-transilluminator and better performance than traditional epi-blue light box.

*SYBR is the registered trade mark of Molecular Probe Inc.

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