

Observation of Bio-Safe Dyes via BW-20

Commonly used Bio-Safe dyes, such as *SYBR® Safe, *SYBR® Green I, *SYBR® Gold and **GelGreen™, were all claimed that can have good excitation result through blue light excitation. As using of blue light excitation, it can prevent DNA from damaged by UV radiation and also protect human body from the UV hazards. When using these common Bio-Safe dyes, precast those dyes into agarose gel is the fastest way to get result right after electrophoresis. Following are the observation results of Bio-Safe dyes through BW-20 transilluminator.

MATERIALS

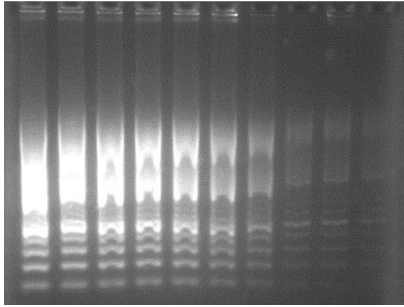
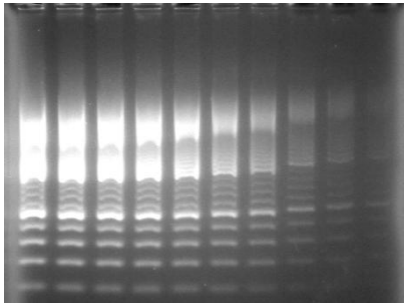
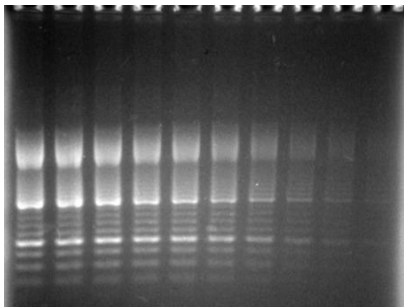
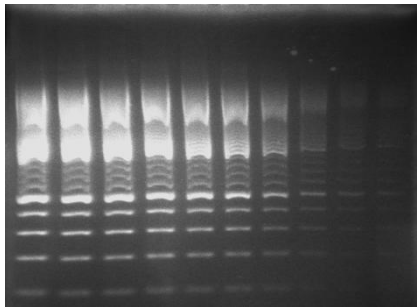
- BW-20 Blue and white light transilluminator(Wealtec)
- *SYBR® Safe, SYBR® Green I, *SYBR® Gold Nucleic acid gel stain (Life Technology)
- **GelGreen™ Nucleic acid gel stain (Biotium)
- 1.5% 0.5 x TAE agarose gel
- KETA ML, Dolphin Doc plus imaging system (Wealtec)
- 100 bp DNA ladder (MDBio)

PROCEDURES

- Melt the 1.5% 0.5x TAE agarose gel into solution.
- Wait for the solution to chill down under 60°C.
- Add 5 µL *SYBR® dyes into 50 mL gel solution and mix well.
- Pull the gel solution into casting module.
- Prepare 100 bp DNA ladder stock for **GelGreen™ and *SYBR® Safe stained gels, and half diluted stock for *SYBR® Gold and *SYBR® Green I stained gels.
- Resolve different stock of the 100 bp DNA ladder with following amount through 90 V for 90 minutes: 8, 7, 6, 5, 4, 3, 2, 1, 0.5, and 0.25 µL.
- Capture image with KETA ML or Dolphin Doc+ system through BW-20 and high transparenance orange filter.

Result

Table 1. BW-20 blue light observation result

Dyes	*SYBR® Gold	*SYBR® Green I
Result		
Condition	Imaging model: KETA ML Iris: fully opened Exposure time: 0.3 seconds Filter: HT Orange filter	Imaging model: Dolphin Doc+ Iris: 1.2 Exposure time: 0.6 seconds Filter: HT Orange filter
Dyes	*SYBR® Safe	**GelGreen™
Result		
Condition	Imaging model: KETA ML Iris: fully opened Exposure time: 0.8 seconds Filter: HT Orange filter	Imaging model: Dolphin Doc+ Iris: 1.2 Exposure time: 0.3 seconds Filter: HT Orange filter

DISCUSSION

After resolved 100 bp DNA ladder in four different Bio-Safe dyes stained agarose gel, result were observed through BW-20 transilluminator with blue light and captured by the imaging systems as in table 1. Comparing the sensitivity of each dye, *SYBR® Gold and *SYBR® Green I can have almost similar sensitivity in the test. As comparing the excited light intensity, the intensity from *SYBR Gold is stronger than *SYBR® Green I. Besides, **GelGreen™ and *SYBR® Safe have lower detection ability than the other two dyes. However, *SYBR® Safe stained gel will have less shifting effect toward DNA among these four dyes as running under the same electrophoresis condition. According to the result, Bio-Safe dyes including *SYBR® Gold, *SYBR® Green I, *SYBR® Safe, **GelGreen™ were proved to have good observation result by using BW-20 in both KETA or Dolphin series imaging systems.

BW-20 transilluminator is equipped with selectable blue and white LED light provides uniform trans-light emission. It gets rid of the way of traditional Epi light excitation but using the unique transparent Multi-Inner-Reflection to get the best uniform light intensity. It's applicable for Bio-Safe applications and remains the best excitation efficiency for agarose and protein gels.

Whole series of Wealtec gel imaging systems, including KETA G/M/S, Dolphin Doc plus, and Dolphin View II, are all equipped with built-in power source which applicable for BW-20 transilluminator. BW-20 is also compatible with other brands imaging systems by using the external power adaptor.

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

** GelGreen™ is the trade-mark of Biotium, Inc.

Yi-Ta, Chen, Product Manager
Ming-Hong, Cyue, Application Specialist

Wealtec Bioscience Co. Ltd.
Phone: +886-2-8809-8587 FAX: +886-2-8809-8589;
<http://www.wealtec.com> Email: sales@wealtec.com