

BOL9

## NOVAptamer to Thiabendazole

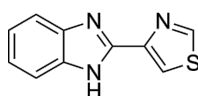
### Target Information

#### Thiabendazole

Thiabendazole (TBZ) is a broad-spectrum benzimidazole fungicide and parasiticide, extensively used in agriculture to protect crops from fungal infections. It acts by inhibiting microtubule polymerization, disrupting cellular division in fungi and parasites. Due to its persistence and potential health risks, monitoring TBZ residues is essential to ensure compliance with food safety regulations.

**Molecular formula:** C<sub>10</sub>H<sub>7</sub>N<sub>3</sub>S

**Molecular weight:** 201.2 g/mol



### NOVAptamer BOL9

**Chemistry:** DNA

**Size:** 82 nt

**Molecular weight:** 25289 g/mol

**Molar extinction coefficient:** 783700 l.mol<sup>-1</sup>.cm<sup>-1</sup>

**Binding buffer:** 20 mM HEPES, 20 mM CH<sub>3</sub>COONa, 140 mM CH<sub>3</sub>COOK, 3 mM (CH<sub>3</sub>COO)<sub>2</sub>Mg, pH 7.4

*A truncated version of this aptamer, 38 nt long, is available (see BOL9-T2Ta).*

Folding an aptamer into its tertiary structure is essential for optimal target binding. To achieve this, resuspend the aptamer in assay buffer, heat to 95°C (~2 minutes), then allow to cool to room temperature (~5 minutes) before use.

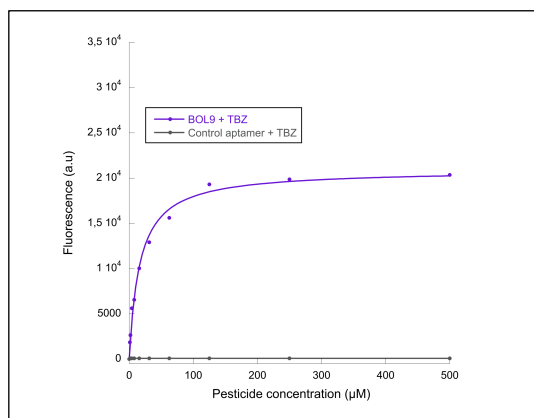
### Affinity Determination

**Affinity Determination Method:** Fluorescence

**Apparent K<sub>D</sub> in the binding buffer:** 16 µM

**Specificity:**

- cross reacts with: Imazalil (affinity~100 µM)
- does not cross react with: Carbendazim



**Figure 1.** Dose-response fluorescence recovery in a molecular beacon assay following fungicide addition.

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### Key advantages offered by aptamers over other affinity reagents, notably antibodies

✓	High affinity and selectivity
✓	Thermostable, long shelf life
✓	Animal- and cell-free selection
✓	Chemical synthesis
✓	Batch to batch reproducibility

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### Custom synthesis

- **Available at different scales** – upon request, up to 100 nanomoles
- **Various purification modes** – adapted to specific experimental requests
- **Extensive conjugation options for diverse applications:**
  - Grafting: NH<sub>2</sub>, SH, biotin, etc.
  - Sensing: fluorescent dyes, nanoparticles, redox groups
  - Cross-linking: click chemistry reagents
- **Molecular beacons** - possible hybridization with a complementary oligonucleotide to form a bimolecular beacon, enabling quantitative detection

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### Applications (For Research Use Only)

- Biosensing
- Environmental monitoring (e.g., water/soil contamination)
- Food safety and agricultural monitoring (e.g., fungicide residue testing)

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### Contact information

For more information or inquiries, please contact:

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