



## Fenbendazole

Fenbendazole is an anthelmintic drug widely used to treat a variety of parasitic infections caused by nematodes, cestodes, and trematodes. It is particularly effective in veterinary medicine for treating parasitic infections in animals such as dogs, cats, horses, and livestock. Fenbendazole works by binding to tubulin, a protein that forms microtubules in cells. By preventing the polymerization of microtubules, it disrupts the parasite's ability to use glucose and divide, ultimately killing the parasite. It has a very low toxicity to mammals at therapeutic doses, making it safe for use in pets and livestock.

### Mechanism of Action:

- **Tubulin Inhibition:** Fenbendazole binds to  $\beta$ -tubulin in parasitic cells, inhibiting the polymerization of microtubules. This disrupts essential cellular processes, including nutrient absorption, cell division, and motility.
- **Selective Action:** The drug primarily affects parasitic cells because of differences in tubulin structure between parasites and host cells.
- **Energy Metabolism Disruption:** In some studies, fenbendazole has been shown to disrupt the parasite's energy production, leading to cell death.

Fenbendazole is effective against a broad range of intestinal worms, including hookworms, roundworms, tapeworms, and whipworms. It is often used in both dogs and livestock to control parasitic infections. Fenbendazole has been studied for potential anti-cancer properties in human medicine, where it has shown preliminary effects against certain cancer cell lines. However, these uses are still experimental and require more clinical validation.

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|---------------------|-----------------------------------------------------------------|
| Cat. Number         | AS-2046                                                         |
| CAS Number          | 43210-67-9                                                      |
| Additional CAS      | 43210-67-9                                                      |
| MDL Number          | MFCD00144301                                                    |
| PubChem             | 57654186                                                        |
| Molecular Weight    | 299.35 g/mol                                                    |
| Molecular Formula   | C <sub>15</sub> H <sub>13</sub> N <sub>3</sub> O <sub>2</sub> S |
| Storage Temperature | 20–25°C                                                         |
| Form and Color      | White to off-white powder                                       |
| Residue on Ignition | ≤ 0.5%                                                          |
| Loss on Drying      | ≤ 0.5%                                                          |
| Assay               | ≥ 98% (on a dry weight basis)                                   |
| Synonym             | Methyl 5-(phenylthio)-2-benzimidazolecarbamate                  |

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