Anti- parasitic human medications that have been researched for cancer treatment

IVERMECTIN - The drug paralyzes and kills parasites by increasing the permeability of cell membranes to chloride ions. It also has anti-inflammatory effects by inhibiting cytokine production.

MEBENDAZOLE - is an antiparasitic drug used primarily to treat intestinal infections such as enterobiasis (threadworms), ascariasis, trichuriasis, and hookworms. It works by blocking the worms' ability to use sugar (glucose), leading to their death.

ALBENDAZOLE - is an FDA-approved medication for the treatment of a variety of parasitic worm infections. Albendazole is an antihelminthic medication with numerous indications such as cystic hydatid disease of the liver, lung, and peritoneum resulting from the larval form of the dog tapeworm, Echinococcus granulosus.

NICLOSAMIDE - Niclosamide, an FDA-approved antihelminthic drug, is being repurposed for cancer therapy due to its ability to inhibit multiple oncogenic signaling pathways—including STAT3, Wnt/\(\beta \)-catenin, mTOR, and Notch—and induce cancer cell apoptosis. Preclinical studies show it suppresses cancer stem cells, tumor growth, and metastasis in breast, prostate, and lung cancers.

ARTEMISININ - is a natural compound with potent antiparasitic properties, derived from the annual mugwort plant (Artemisia annua). It is a key ingredient in anti-malaria medications (for which the Nobel Prize was awarded in 2015), and also exhibits anti-inflammatory and antiviral properties, as well as potential in the treatment of Lyme disease and some cancers.

PRAZIQUANTEL - could potentiate the growth-inhibitory effect of PTX in various tumor cells, including those resistant to PTX. The co-treatment of PZQ and PTX could also dramatically activate the apoptosis cascade, accompanied by perturbations in survival and signaling regulatory proteins.

PYRVINIUM PAMOATE - Indeed, the antihelminthic drug, pyrvinium pamoate, has shown promise as an anti-pancreatic cancer drug. However, the only mechanism of action ascribed to this has been its ability to inhibit mitochondrial function.

LEVAMISOLE - may be useful by itself as an adjuvant therapy for resected melanoma; recently it has been shown to be effective in combination with fluorouracil (5-FU) as adjuvant therapy for tumor-node-metastasis (TNM) stage III (Dukes' C) colon carcinoma.

SURAMIN - Suramin has shown promising activity against prostate and breast cancer but is severely neurotoxic. Complex adaptive pharmacokinetics have previously been used to adjust doses.

QUINACRINE - has been shown to possess anticancer effect both in vitro (cancer cell lines) and

in vivo (mouse models). In the cancer cells, QC can simultaneously suppress nuclear factor-κB and activate p53 signaling, which results in the induction of the apoptosis in these cells.