

BioPharmica progresses toward cancer treatment

Written by Laura Gilboa
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BIOPHARMICA Ltd (BPH) is sailing toward pre-clinical testing of a new class of anti-cancer drugs, with Dr Robin Scaife at the helm.

The progress coincides with the announcement of BPH's new agreement with the University of Western Australia, which stipulates BPH will now own 100 percent of the intellectual property of the HLS5 project and derivatives, including the anti-cancer agents.

The research has profound implications, considering current approved anti-mitotic drugs such as Taxol® and Velban® attract more than US\$1 billion in revenue per year, according to BPH.

Project leader Dr Robin Scaife says this new class of anti-mitotic drugs represent an important category of anti-neoplastic cancer therapeutics.

"By blocking cell division (mitosis), they can profoundly inhibit tumour growth and even cause tumour shrinkage," he says.

"The new growth inhibitory drug that I have discovered is an anti-mitotic drug, therefore, it directly inhibits cell division, thereby killing most human cancer cells tested to date."

Mitosis requires the assembly of a highly complex and tightly regulated cellular structure, known as the mitotic spindle, which orchestrates the chromosome segregation that is required for cells to divide and proliferate.

According to Dr Scaife, the new drug perturbs the spatial/3D organisation of the mitotic spindle, thereby preventing the chromosome segregation and cell division/proliferation.

Dr Scaife says his anti-mitotic drug discovery may represent a new, or third, class of mitotic spindle inhibitors.

"Its mode of action appears to be quite distinct from the effects of mitotic kinase and mitotic kinesin inhibitors on dividing cells," he says.

"The first generation of anti-mitotics like Taxol® affect the assembly of the protein fibres (microtubules) that form the mitotic spindle.

"While these drugs block cell division and are effective at inhibiting the proliferation of cancerous cells, they also tend to cause undesirable side-effects such as neuropathy.

"These side-effects are largely due to inhibition of other important microtubule functions and these microtubule drugs also suffer from the ability of most cancerous cells to develop resistance to them."

BPH chairman Mr David Breeze says detailed analyses of chemical analogues of the new drug have yielded a new drug that exhibits nearly 1000 times the biological activity of the initial compound derived by screening of a chemical library.

"This new drug has also recently undergone testing in animals to rule out adverse toxic side-effects and animals exposed to very high levels of the new drug exhibited no signs of acute toxicity," Mr Breeze says.

Dr Scaife says the next step will be testing the anti-tumour activity in vivo using a variety of animal models of tumour growth.

"In light of the anti-tumour activities of other anti-mitotic drugs, we expect our pre-clinical/animal testing of anti-tumour activity to be successful," he says.



BioPharmica Ltd is moving towards pre-clinical testing of anti-cancer drugs which aim to block the growth of tumours / Image: Istockphoto