PHARMA Pharmacologia

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News & Comments

Valsartan Shows Proangiogenic Activity That Can Attribute to Cancer Cell

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The most common disease in the world, hypertension kills 9.4 million people each year and affects more than 1 billion people. Antihypertensive therapies help avoid the harmful effects of hypertension, such as heart failure, coronary artery disease, and stroke (AHTs). Valsartan exhibits a stronger affinity for the AT1 receptor than losartan; however, this affinity is inferior to that of candesartan, telmisartan, and Olmesartan. Due to valsartan's short half-life of seven hours, just one dose is recommended each day to reduce blood pressure. In addition, a patient developed melanoma after taking valsartan, according to a recent report. To determine the risk of cancer progression in various organs and the impact of valsartan on angiogenesis, further research is needed.

In the present study, it was investigated that the angiogenic potential of valsartan, as well as assessed of risk of MCF-7 ductal carcinoma growth and metastasis in the chicken embryo chorioallantois membrane model.

Rajdhani Agro Products in India provided the embryonated Cobb430Y chicken eggs at the age of 0 days. The control group was regarded as the first group and treated with 100 L PBS; the second group had eggs inoculated with 50,000 MCF-7 cells (50 L); the third group received valsartan (50 L) equivalent to the human daily dose (the human dose was calculated as 80 mg per day considering the human weight as 60 kg; thus, 80 g drug was introduced per egg); and the fourth group had eggs inoculated with 50,000 MCF-7 cells (50 To make it easier to compare data in pairs, the Tukey's HSD procedure was used within the ANOVA.

The eggs' shell was opened to collect CAM tissue after 72 hours had passed. A 40X microscopic examination of the obtained CAM was performed. When compared to the control group, the research showed that all treated groups had more branch points. The number of branch points between the control and valsartan-treated CAMs differed significantly, as shown by Tukey's HSD technique in the current study. Points grew in every treatment group's branch count. According to a histological study, the control group's vascular system was well structured, with few mesodermal blood vessels and many epidermal blood vessels that had the typical design of CAM. Squamous cell carcinoma, breast adenocarcinomas, and other neoplastic tissues have been demonstrated to express the AT1 receptors.

As a measure of the capillary plexus's growth, the number of branch points is counted in various groups. Valsartan treatment was observed to boost angiogenesis compared to control, which confirms

Li et al result's that there was an increase in vessel density after valsartan treatment. At the histological level, pairs of blood vessels were seen inside intussusceptive angiogenesis. In conclusion, the CAM model of chicken embryos suggests that valsartan medication may enhance the risk of mammary ductal carcinoma growth and spread.

The medication valsartan is commonly used to treat hypertension problems. Intussusceptive angiogenesis, increased branch points, and the presence of vessels with ablated pericyte and endothelial cell hyperplasia in the CAM model are all evidence in current study that valsartan has a proangiogenic role. As a result, it may increase the risk of tumour growth and spread through leaky, pericyte ablated vessels.

JOURNAL REFERENCE

Munjal, A., R. Khandia, S. Paladhi, M. Pandey and A. Parihar *et al.* 2022. Evaluating the effects of hypotensive drug valsartan on angiogenesis and associated breast ductal carcinoma cell metastasis. Int. J. Pharmacol., 18: 817-825.

KEYWORDS

Anti-hypertensive drug, valsartan, angiogenesis, leaky vessels, tumour metastasis, chorioallantois membrane, AT1 receptor