

Decreases of Calcium, Phosphorus, Zinc and Iron in the Aortic and Pulmonary Valves of Pig with Development

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ABSTRACT

To elucidate compositional changes of the cardiac valves with development, the authors investigated changes of elements in the four cardiac valves of pig with development and the relationships among elements. The four cardiac valves of the aortic, pulmonary, mitral and tricuspid valves as well as the left and right coronary arteries were resected from 16 pigs, ranging in age from 2 mo to 5 mo. The element content was determined by inductively-coupled plasma-atomic emission spectrometry (ICP-AES). It was found that Ca, P, Zn and Fe decreased significantly with development in both the aortic and pulmonary valves, with one exception, but Ca, P, Zn and Fe did not decrease significantly with development in the mitral and tricuspid valves, except for Ca in the mitral valve. In both the left and right coronary arteries, Ca, P, Zn and Fe decreased significantly with development.

Regarding the relationships among elements, significant direct correlations were found among Ca, P, S, Mg and Zn in both the aortic and pulmonary valves, with two exceptions in the pulmonary valve. In contrast, no significant correlations were found among Ca, P, S, Mg and Zn in the mitral and tricuspid valves, except for Ca and Zn in the mitral and tricuspid valves. In both the left and right coronary arteries, significant direct correlations were found among Ca, P, S, Mg and Zn. With respect to the relationships among elements, the aortic and pulmonary valves were similar to the coronary arteries, but the mitral and