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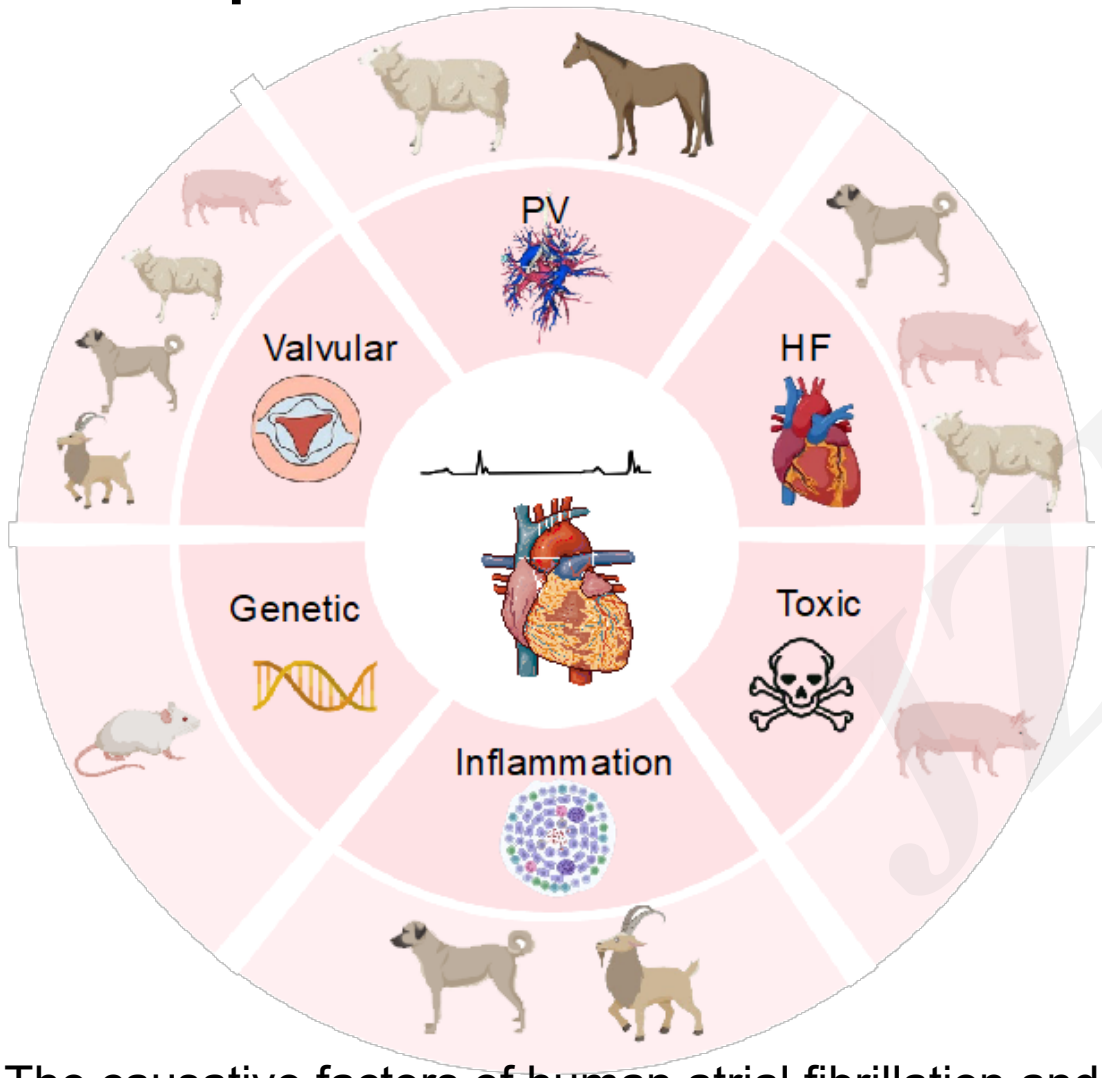
Therapeutic advances in atrial fibrillation based on animal models

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Keywords: atrial fibrillation, animal models; therapeutic

Summary

This review aims to summarize the various animal models of atrial fibrillation (AF) developed to date and the related advancements in AF treatment.



The causative factors of human atrial fibrillation and the respective animal models

- **Small animal models of AF**
- **Large animal models of AF**
- **Advances in AF treatment**

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Innovation points

- **Introduction the pathogenesis and treatment strategy of AF**
- **Summary the characteristics of various animal models and their application in the study and treatment of AF**
- **Emphasis the role of various animal models in the treatment of AF**



Easy to generate and manipulate;
Low rearing costs

Differences in heart size and electrophysiology;
Tools used for human electrophysiological studies are not applicable to mice



Pharmacology Research;
Easier to perform experimental manipulations

Weak genetic manipulation;
Short duration of AF



Long duration

Relatively short action potential



Ability to use clinical instruments;
Anatomy and electrophysiology similar to human

Complex genetic background;
Significant differences in heart weight/body weight ratio;
Electrocardiographic differences;
Low social acceptance



Classical AF model

High feeding costs;
Low similarity to human physiology



Heart and coronary artery structure similar to human;
Electrophysiology similar to that of humans;
Action potentials similar to human; Gene editing is possible

Few coronary artery side branches



Natural development AF;
AF follows a similar progression to that of humans;
PV has ectopic electrical activity that can trigger AF

Electrophysiological properties are different from those of humans;
Different action potentials have different durations;
High feeding costs;Low social acceptance

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Innovation points

A series of comprehensive tables were generated to summarize relevant information about AF animal models.

- Table 1 Summary of existing methods and mechanisms in AF animal models
- Table 2 The main mechanisms of different types of AF
- Table 3 Application of common antiarrhythmic drugs in large animal models

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