

ASSIGNMENT 17

Hepatic Disease

An experiment was conducted to examine the influence of avian pancreatic polypeptide (aPP), cholecystokinin (CCK), vasoactive intestinal peptide (VIP), and secretin on pancreatic and biliary secretions in laying hens. In particular, researchers were concerned with the extent to which these hormones increase or decrease biliary and pancreatic flows and their pH values.

White leghorn hens, 14–29 weeks old, were surgically fitted with cannulas for collecting pancreatic and biliary secretions and a jugular cannula for continuous infusion of aPP, CCK, VIP, or secretin. One trial per day was conducted on a hen, as long as her implanted cannulas remained functional. Thus, there were varying numbers of trials per hen.

Each trial began with infusions of physiological saline for 20 minutes. At the end of this period, pancreatic and biliary secretions were collected and the cannulas were attached to new vials. The biliary and pancreatic flow rates (in microliters per minute) and pH values (if possible) were measured. Infusion of a hormone was then begun, and continued for 40 minutes. Measurements were then repeated.

Data Set HORMONE.DAT (on the data disk) contains data for the four hormones and saline, where saline indicates trials where physiological saline was infused in place of an active hormone during the second period. Each trial is one record in the file. There are 11 variables associated with each trial, as shown in Table 8.27.

The data are given in hormone.dat and have the following form:

Variable	Record Number	Column	Code
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ID	1	1-8	
Biliary secretion-pre	1	10-17	
Biliary pH-pre	1	19-26	
Pancreatic secretion-pre	1	28-35	
Pancreatic pH-pre	1	37-44	
Dose	1	46-53	
Biliary secretion-post	1	55-62	
Biliary pH-post	1	64-71	
Pancreatic secretion-post	2	1-8	
Pancreatic pH-post	2	10-17	
Hormone	2	19-26	1=SAL/2=APP/3=CCK/4=SEC/5=VIP
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Construct the appropriate model in BUGS to assess the effect of hormone dose and the type of hormone on pancreatic pH.