



Antimicrobial Functions of Spices

Why Some Like it Hot

Jennifer Billing and Paul Sherman (1998)
Quarterly Review of Biology 73(1): 3–49.

Why does spice use in meat dishes vary cross-culturally?

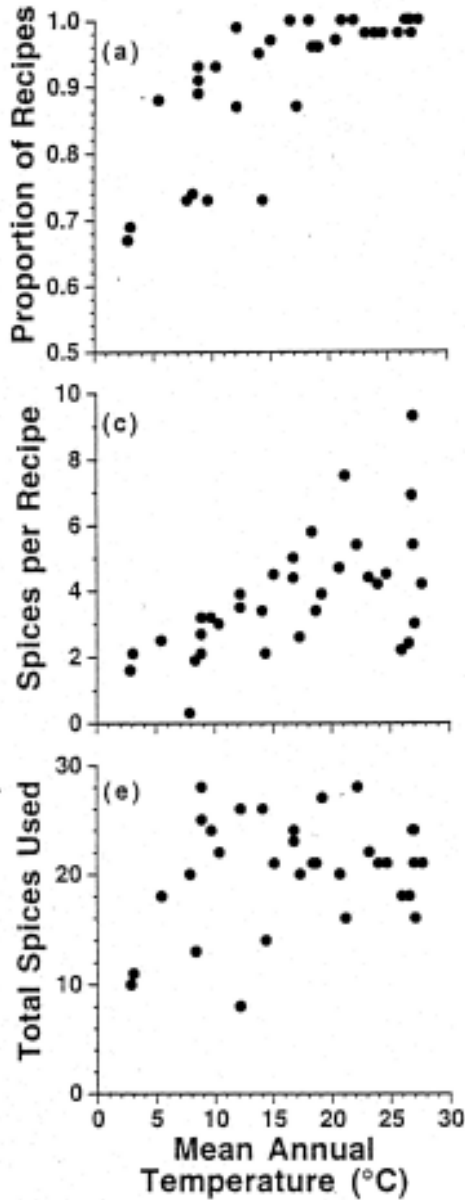
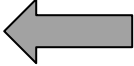
■ Some hypotheses

- ◆ Spices inhibit or kill bacteria and fungi that either spoil food or harm humans
- ◆ Spices provide macro or micronutrients
- ◆ Spices enhance evaporative cooling
- ◆ Spices disguise the taste and smell of spoiled food
- ◆ Spices taste good

If spices serve to preserve food, then the following should be true

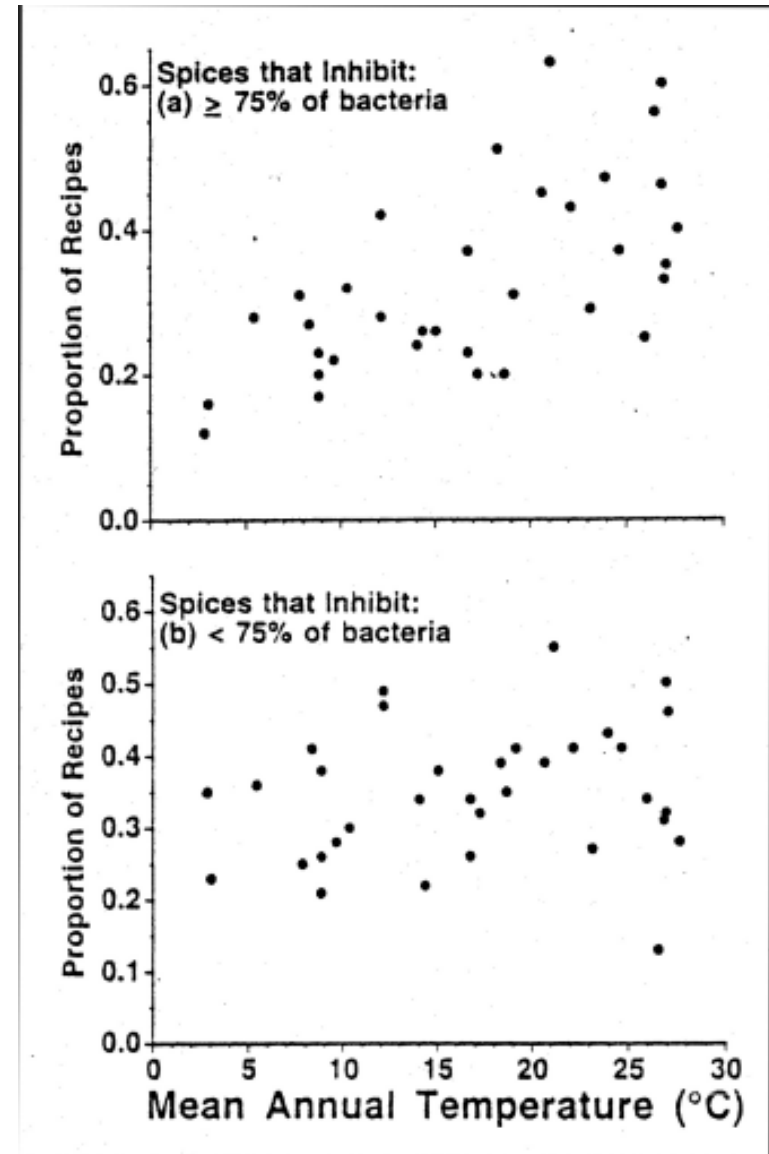
- Spices should kill or inhibit food-spoilage microorganisms →
- Spice use should be heaviest in hot climates where food spoils most rapidly →
- Spices with the most potent antimicrobial properties should be used in areas where food spoils most rapidly →
- Spices used should be especially potent against local pathogens

Climate and Spice Use



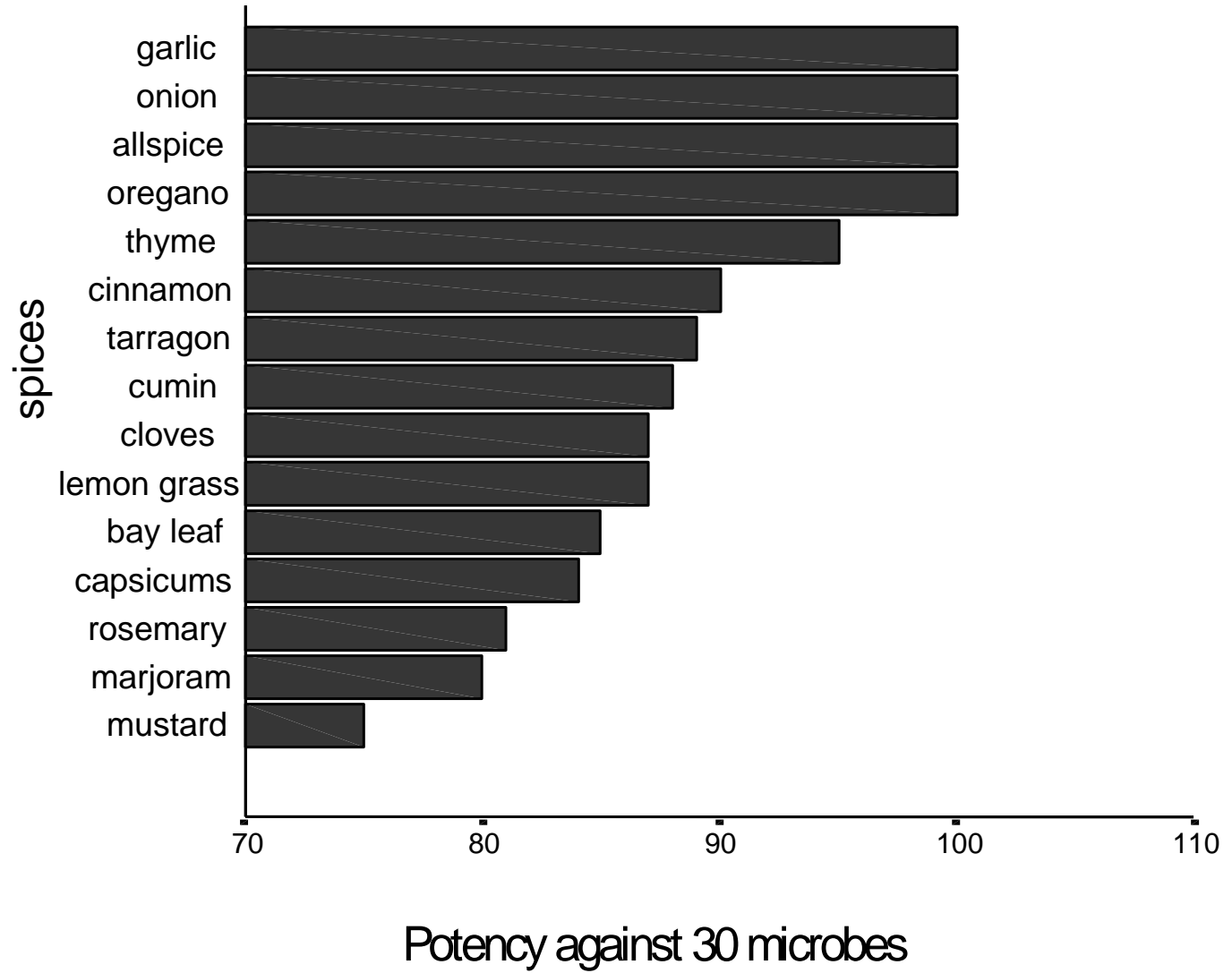
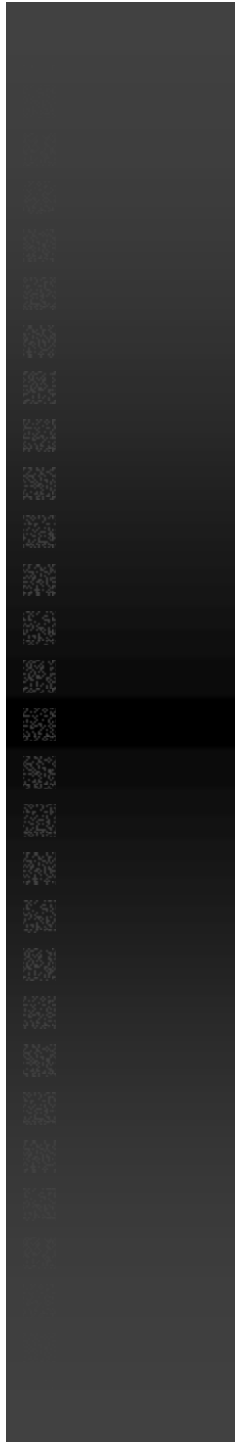
Proportion of recipes that contain potent spices

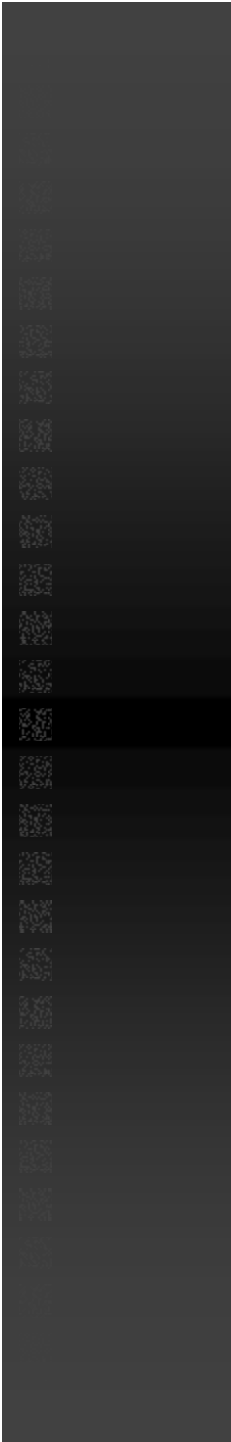
Potent $r=0.668$, $p<0.001$
Weak $r=0.248$, $p>0.10$



Spice Availability and Use

- The researchers initially thought that there would be a correlation between spice use and local availability.
 - ◆ However, they found “no relationship between a country’s mean annual temperature and number of spice plant species that grow there”





If patterns of use are true cross-culturally then the same patterns should be seen intra-culturally.

- Comparisons were made on spice use in regional recipes in the Northeast and the South of North America and Northwestern and Southeastern China.
 - ◆ Variation within cultures followed the same pattern as between cultures.

Spice Potency

