

Major Spice Usage Selection in Late 16th Century English Meat Recipes (1591 to 1597) Compared to Evolutionary Choices to Reduce Common Foodborne Pathogens and Their Gastrointestinal (GI) Symptoms

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ABSTRACT

- Cinnamon and Cloves were most likely chosen for their microbial inhibition and help with GI symptoms and digestion.
- Ginger and Pepper were most likely chosen for their synergy with other ingredients to improve microbial inhibition and also help with digestion.
- 16th century spice usage is statistically different than more recent traditional recipes and show a cultural shift in use.
- 16th century cooks perceived these advantages for these spices and selected them for their meat recipes.

WHAT ARE THE MEAT PATHOGENS' SOURCES?

WHAT GI SYMPTOMS DO THEY CAUSE?

Pathogen	Meat Sources	Symptoms			
		Nausea	Vomiting	Diarrhea	Stomach Cramps
<i>Clostridium botulinum</i>	meat, seafood	✓	✓	✓	
Pathogenic <i>Escherichia coli</i> (<i>E. coli</i>)	meat	✓		✓	✓
<i>Listeria monocytogenes</i>	meat, poultry, seafood	✓	✓	✓	
<i>Salmonella</i> Enteritidis	meat, poultry, seafood	✓	✓	✓	✓
<i>Salmonella</i> Typhimurium	meat, poultry, seafood	✓	✓	✓	✓
<i>Staphylococcus aureus</i>	cooked ham, meat, poultry	✓	✓	✓	✓

(U.S. Department of Health and Human Services n.d.)

MAIN SPICES USED IN 16th CENTURY MEAT RECIPES



HOW DO SPICES HELP?

Spice Ability to Reduce Food Borne Pathogens

<i>Staphylococcus aureus</i>	<i>Salmonella</i>	<i>Listeria monocytogenes</i>	<i>Clostridium botulinum</i>	<i>Escherichia Coli</i>

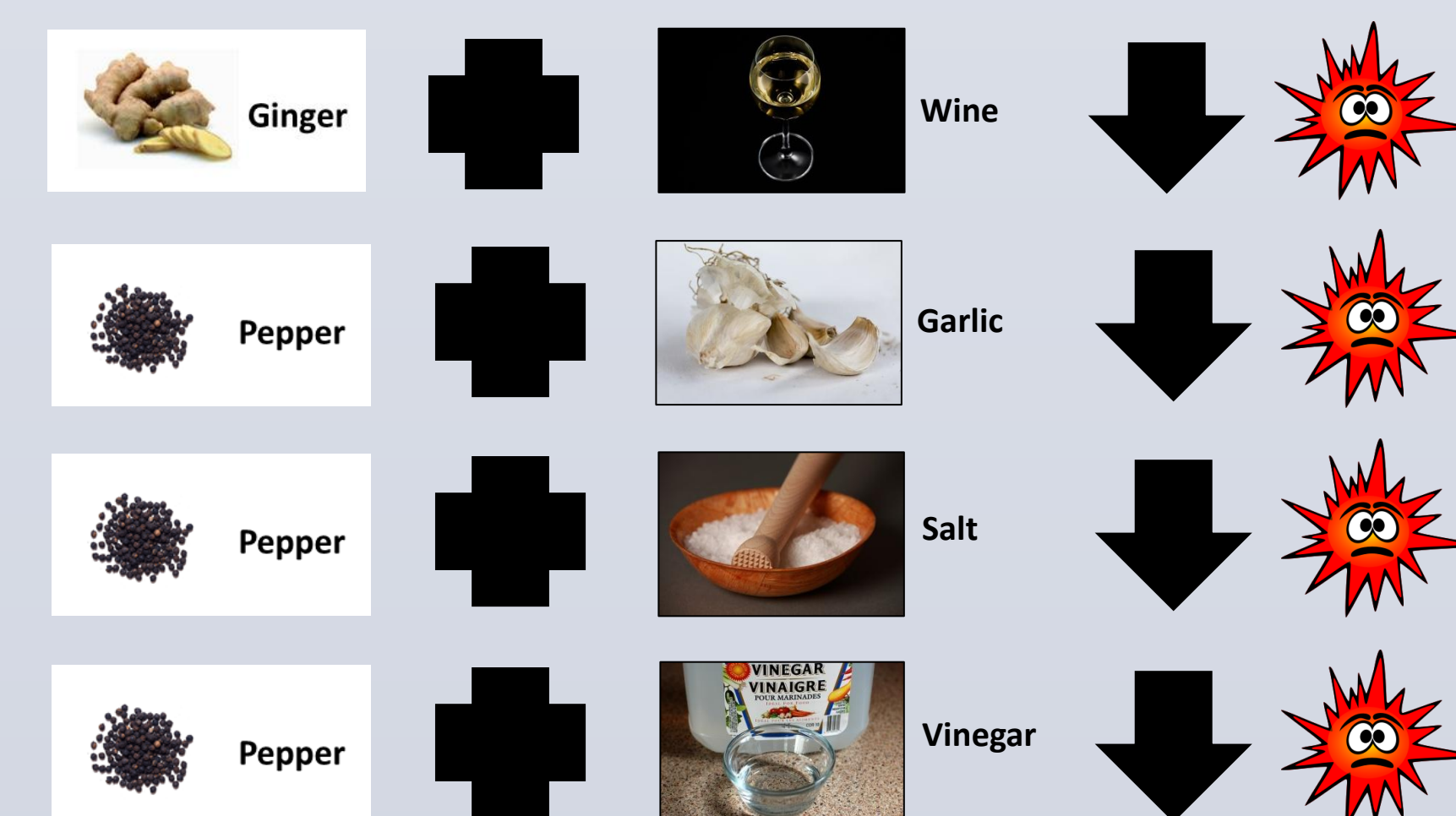
(Parthasarathy, Chempakam and Zachariah 2008) (Latha, et al. 2005)

Spice Assistance for Food Borne Pathogens' GI Symptoms and Improved Digestion

Nausea	Vomiting	Diarrhea	Stomach Cramps	Improved Digestion

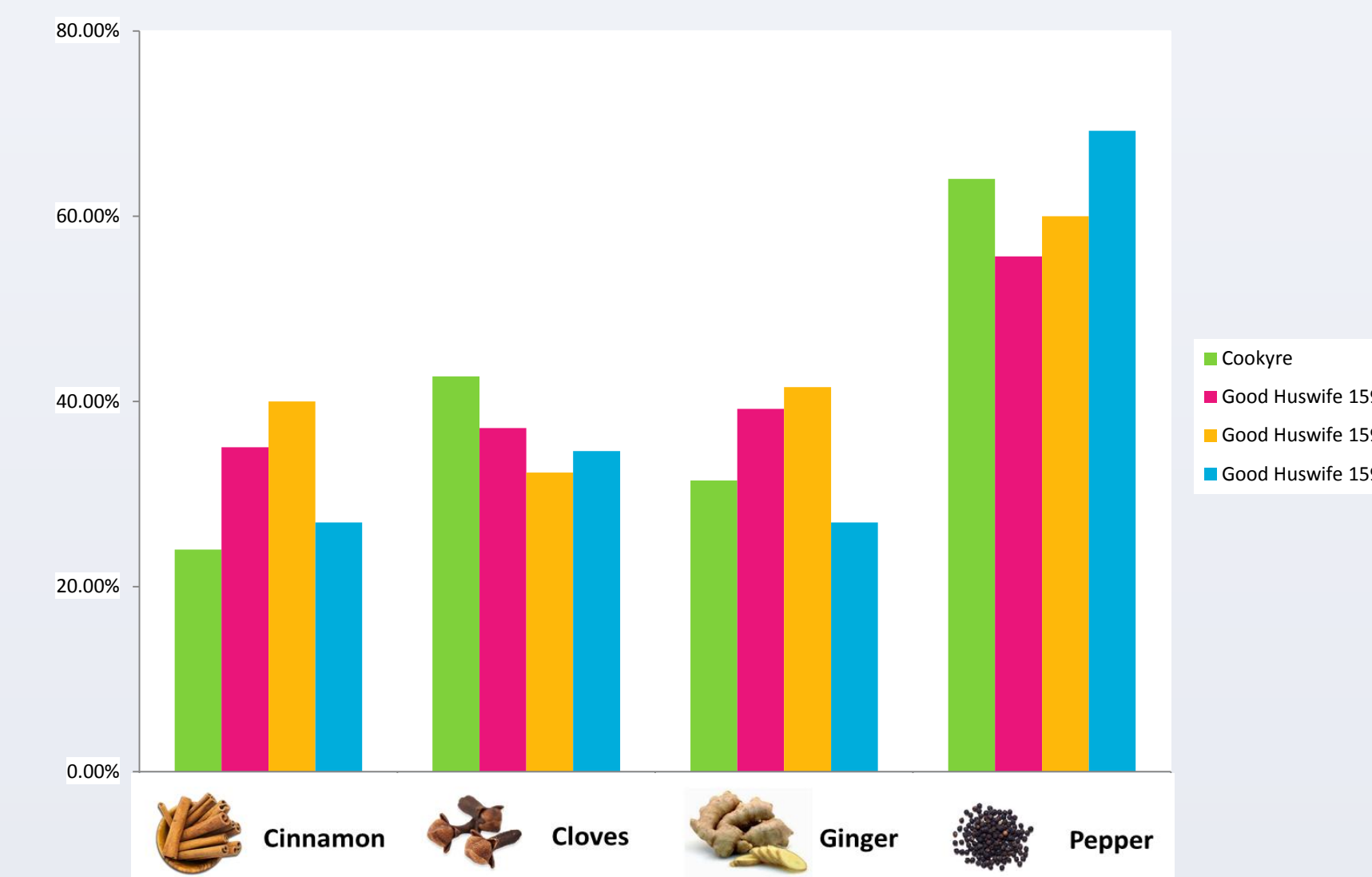
(Vangalapati, et al. 2012) (Akber, et al. 2011) (Parthasarathy, Chempakam and Zachariah 2008) (Bhowmik, et al. 2012) (Banerjee, Mullick and Banerjee 2011) (Hasan, et al. n.d.) (Ahmad, et al. 2012)

Ginger and Pepper Spice Synergy with Other Ingredients to Reduce Food Borne Pathogens

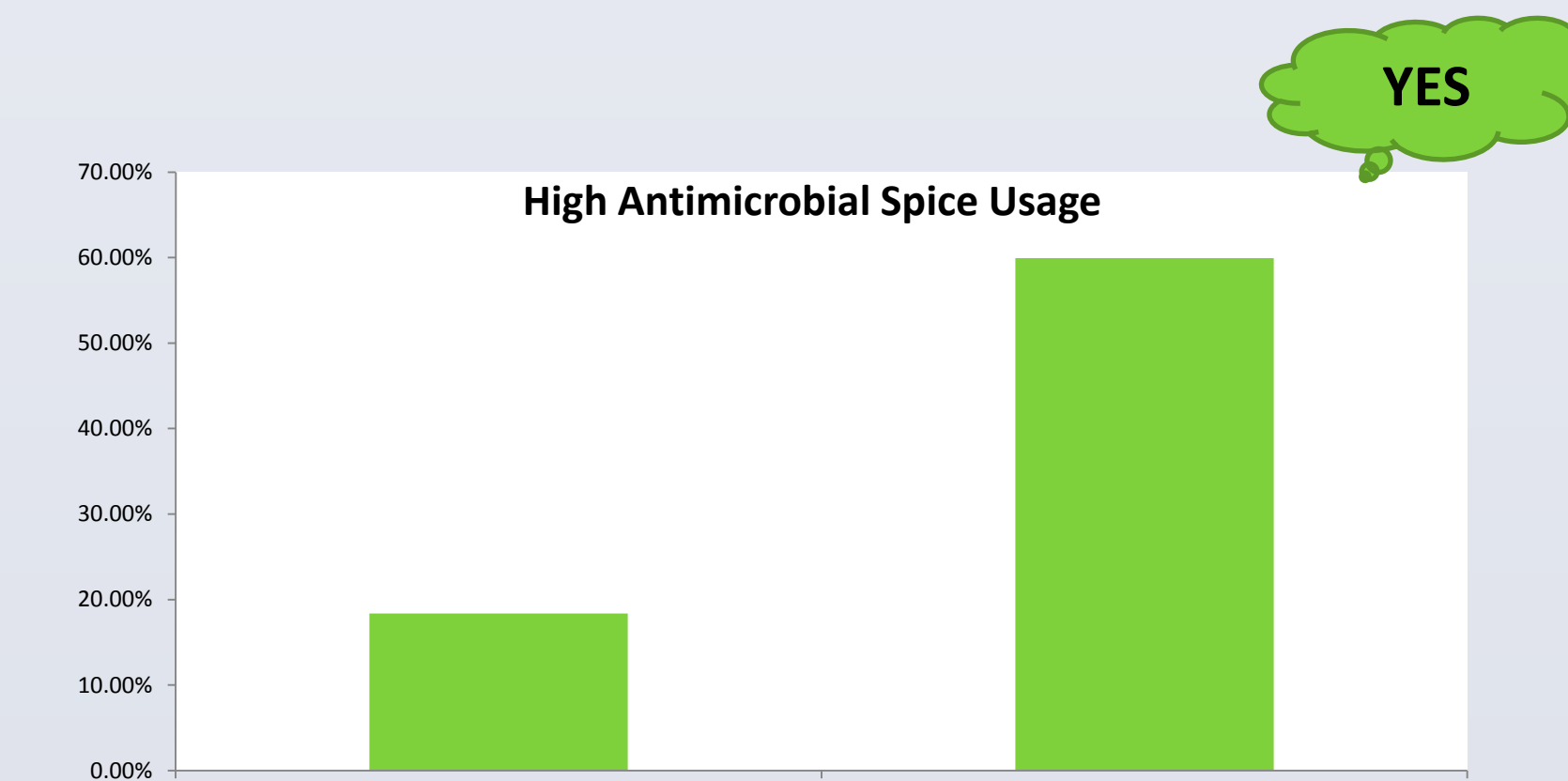


(Billings and Sherman, 1998; Adetunde, et al., 2014 and by Islam, et al, 2014)

HOW FREQUENTLY DID 16TH CENTURY COOKS USE SPICES IN MEAT RECIPES?

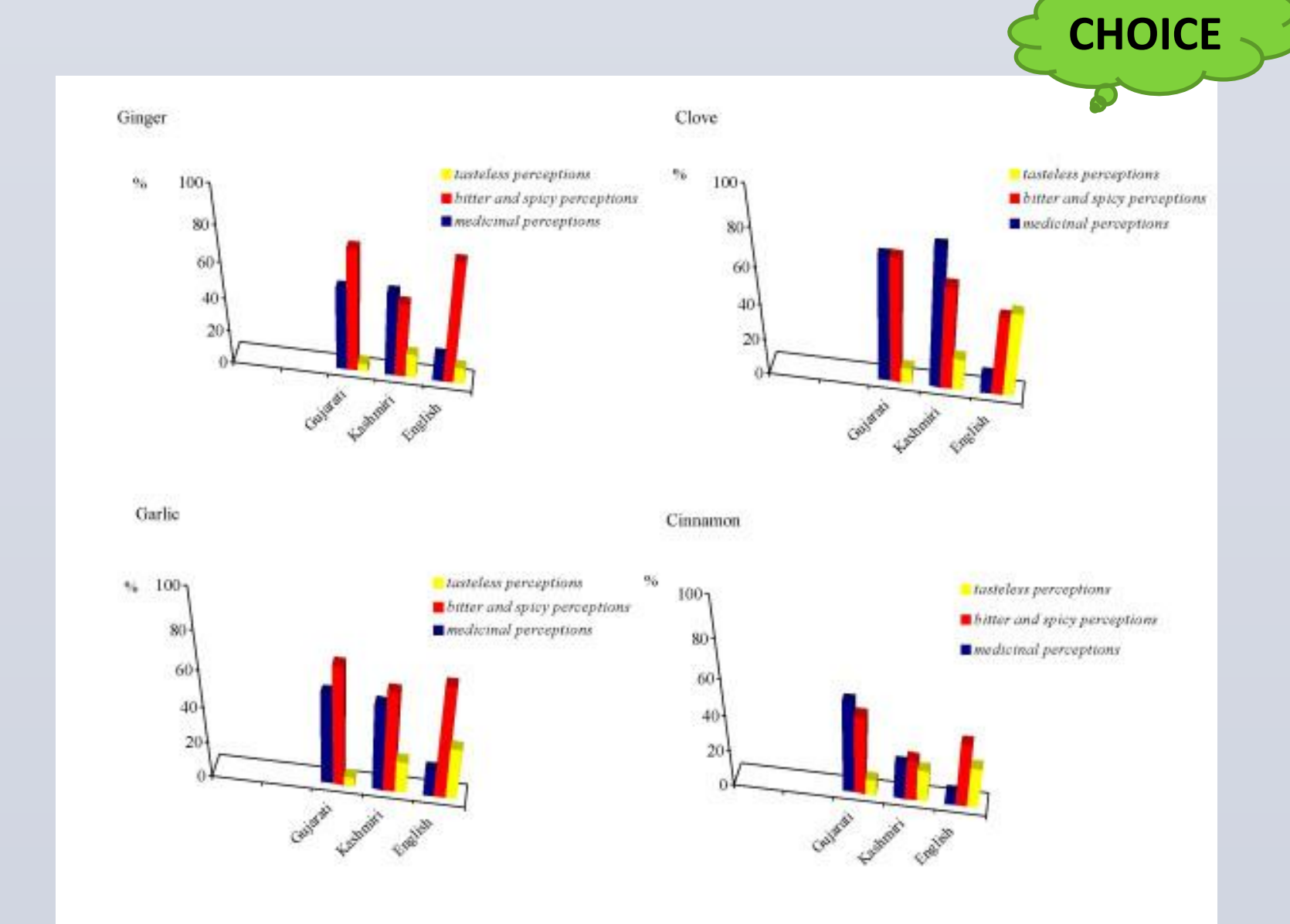


HAS SPICE USAGE CHANGED IN MORE RECENT TRADITIONAL MEAT RECIPES?



- Sherman and Hash's research which included 15 highly inhibiting spices and flavourings compared is still statistically different than the 16th century recipe analysis which only included cinnamon and cloves.
- Shows a significant shift away from spices in more modern English food by why?

DID ENGLISH MOVE AWAY FROM SPICES BECAUSE OF A REGIONAL REASON OR IS IT A CULTURAL EVOLUTIONARY CHOICE?



- Pieroni and Torry (2007) found that the two cultural groups still found ginger, cinnamon and cloves to be medicinal whereas English population did not.

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