

Sorghum polyphenols as bioactive and functional food ingredients



Joseph Awika
Texas A&M University

Sorghum grain

- Drought & heat tolerant
- Highly diverse genetic stock
- Interesting polyphenol profile & chemistry



Whole grains in health

- Intake associated with health benefits
 - Cancer
 - Cardiovascular disease
 - Diabetes
- **Polyphenols** important contributors
 - Structure affects activity

Cinnamic acid

Sorghum diversity

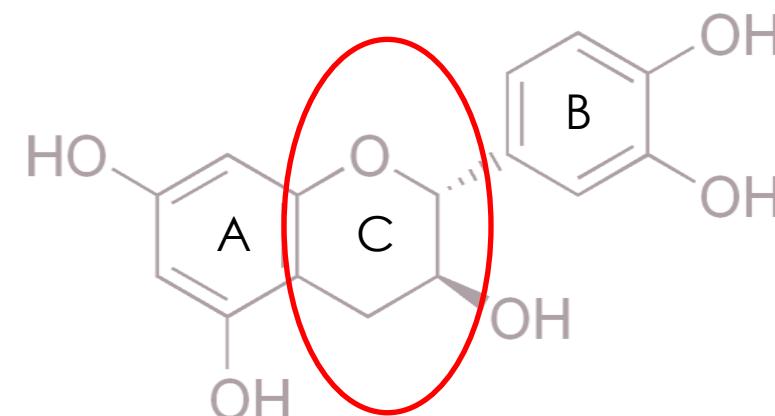
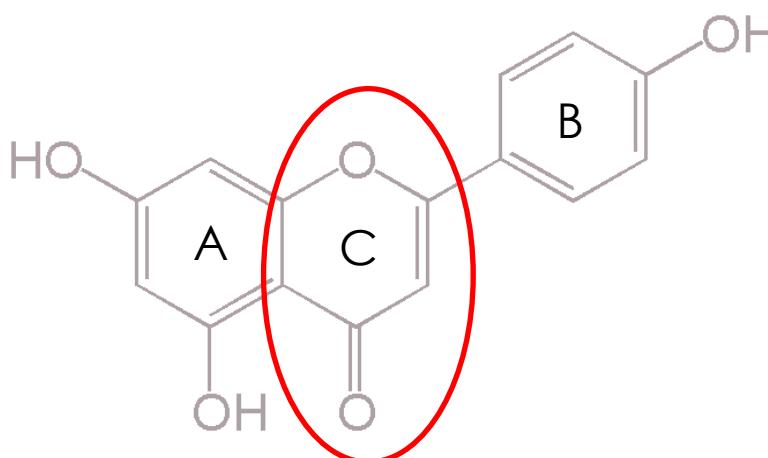
- Pigmented or non-pigmented pericarp
 - White; Red; Lemon Yellow
- Pericarp color dictated by phenolic profile



flavonoids

Sorghum polyphenols

- Flavonoids
 - Monomeric – in all sorghum
 - Polymeric (tannins)
- Sorghum higher levels than most cereal grains



Classified based on “C” ring

Sorghum polyphenols

- Flavonoids – monomeric

- **Flavones**

- Apigenin
 - Luteolin



- Flavanones

- Eriodictyol
 - Naringenin



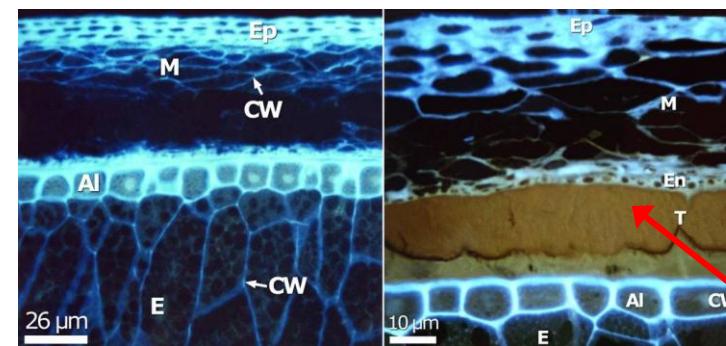
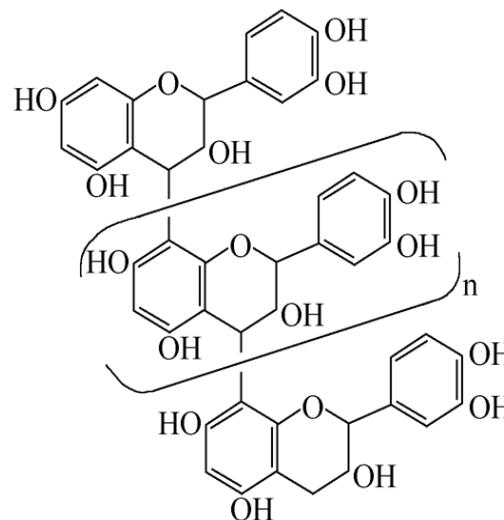
- 3-Deoxyanthocyanins (pigments)

- Apigeninidin
 - Luteolinidin



Sorghum polyphenols

- Tannins



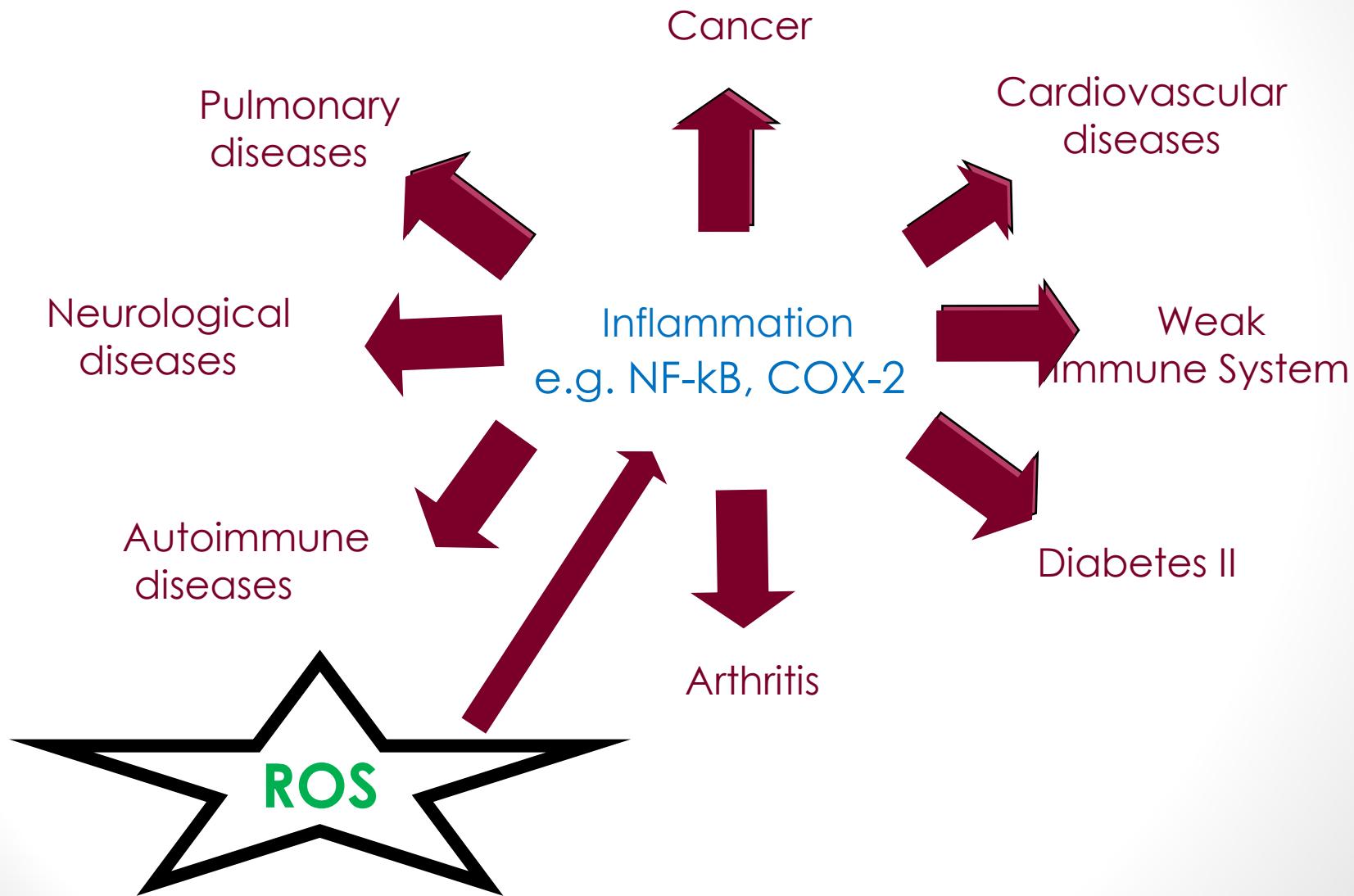
Non tannin
sorghum pericarp

Tannin sorghum
pericarp

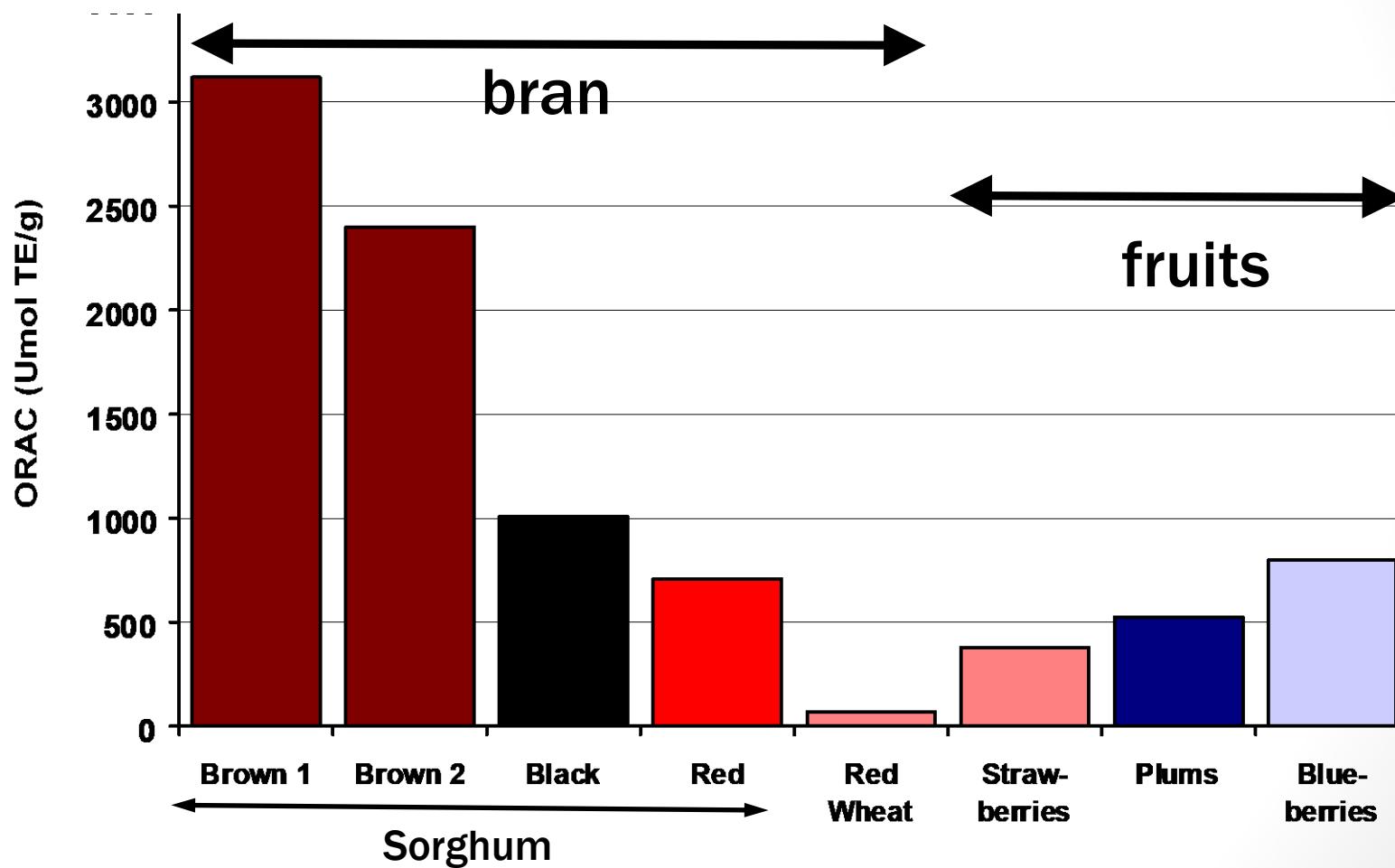
Tannin containing testa



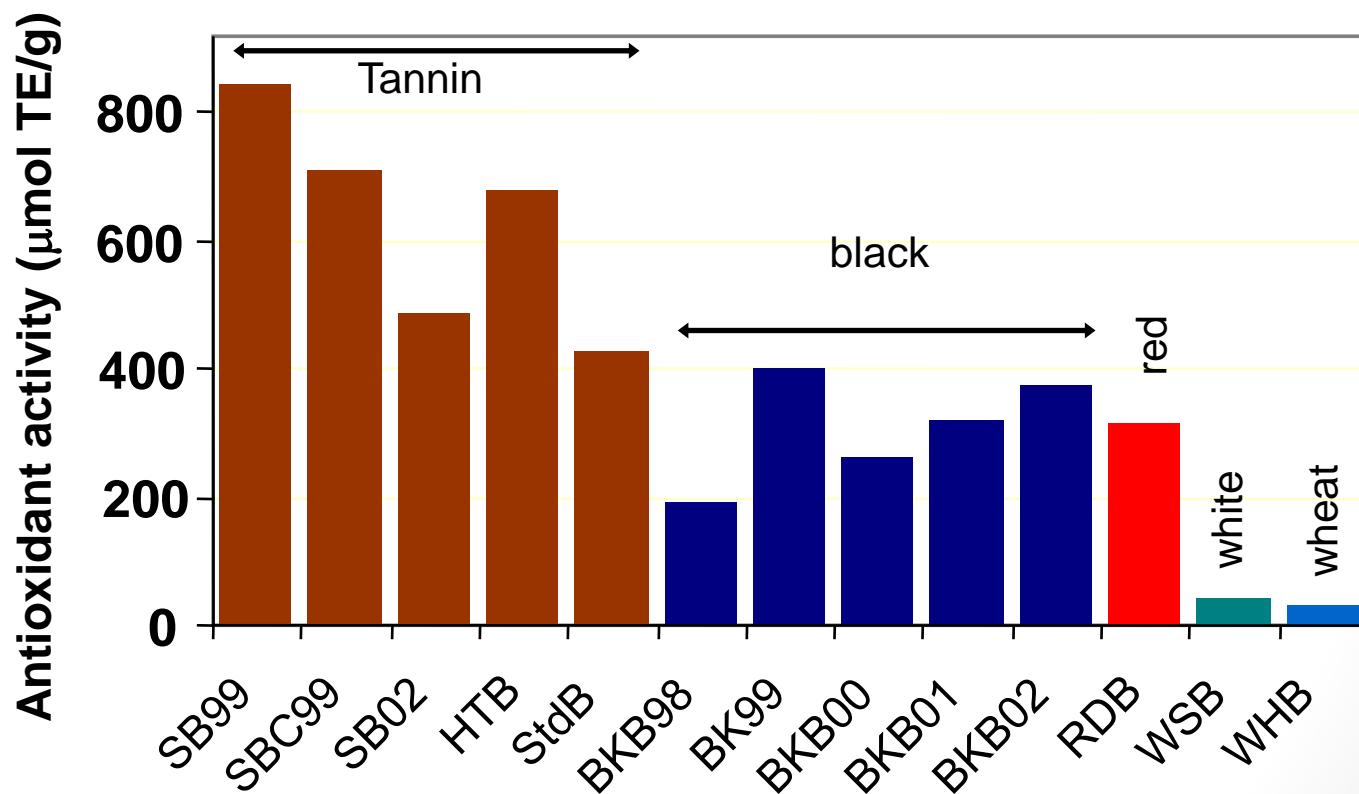
Evaluating sorghum polyphenols bioactivity



Sorghum antioxidant capacity vs fruits



Antioxidant capacity by sorghum type



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