



# 막걸리 (Makgeolli)

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Background and Homebrewing Technique

# Makgeolli: A unique Korean “rice wine”

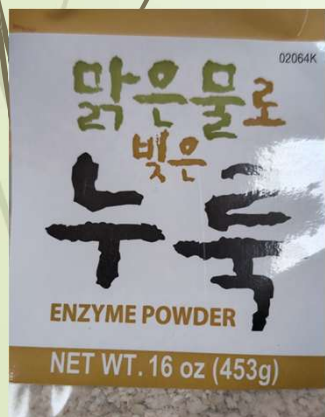
- ▶ “Mak” + “georeu” + “-i” = “fresh” + “strained” + noun suffix
- ▶ Dates back to 1<sup>st</sup> century BCE
- ▶ Commonly anglicized as “makkoli”
- ▶ Rice based alcoholic beverage fermented with *nuruk* starter
- ▶ Unfiltered cloudy appearance
- ▶ Sweet, tangy, bitter, and astringent
- ▶ Slightly fizzy
- ▶ Diluted to below 10% abv by definition
- ▶ Commercial examples are sometimes flavored
  - ▶ Chestnut is a traditional flavor
  - ▶ Fruit flavors are recently popular

Look for Kook soon dang brand in specialty stores  
Find cans of Makku at many beer retailers



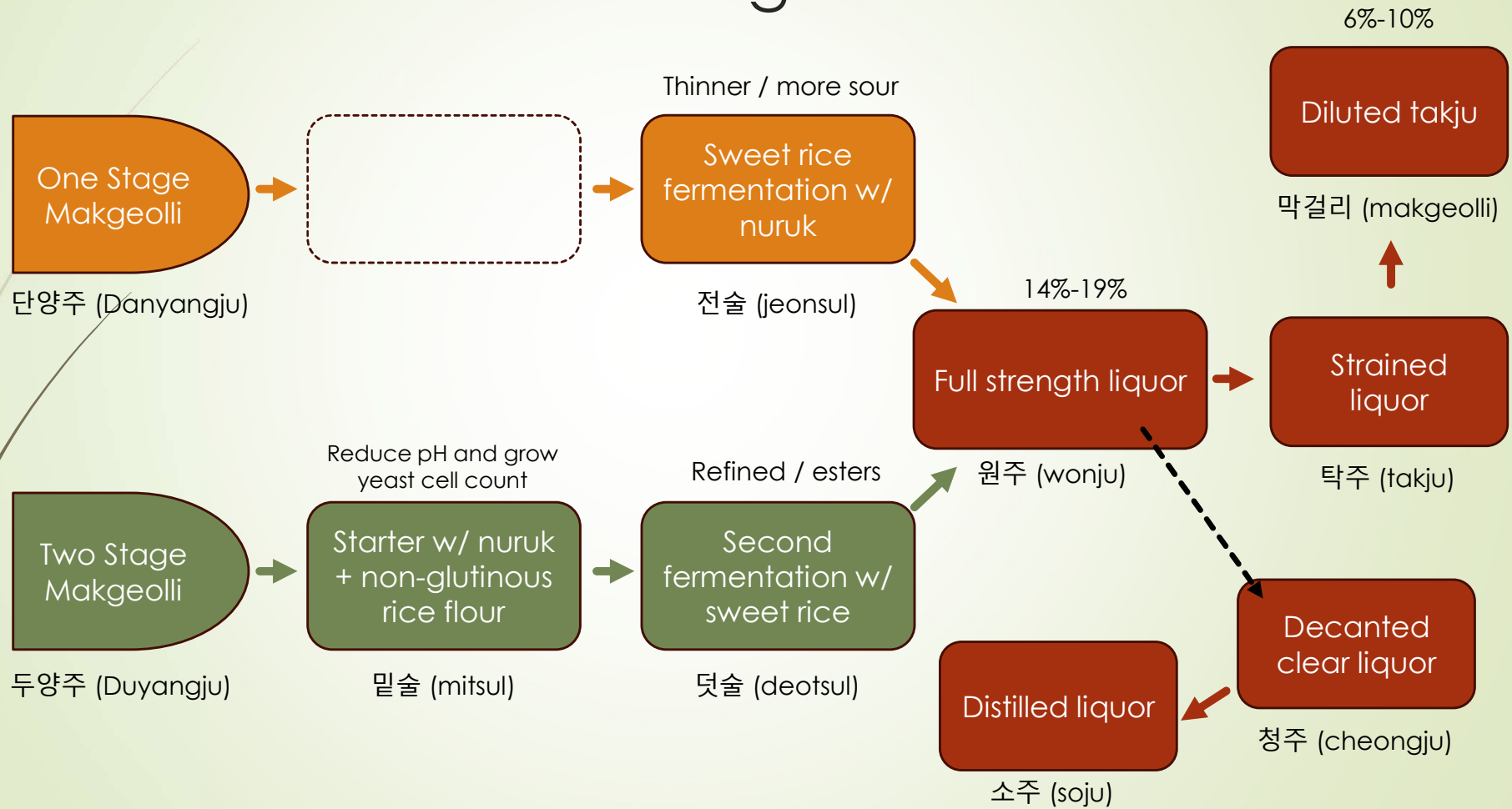
# Nuruk: traditional Korean fermentation starter (누룩)

- ▶ Made from mix of cereals
  - ▶ Wheat, rice, barley, grits, flour
- ▶ Moistened and allowed to ferment
- ▶ Contains microorganisms including *Aspergillus oryzae* and *luchuensis*; lactobacilli; and *Saccharomyces cerevisiae*
  - ▶ *Aspergillus* provides enzyme that can break down rice starch
- ▶ Microbiome varies by region



Look for "enzyme powder"  
at Mega Mart in Fremont

# A tale of two makgeollis





# Brewing Two-Stage Makgeolli

Mitsul starter, deotsul, straining, and diluting

# The mitsul starter

## *For 9-liter fermentation vessel*

- ▶ Mitsul starter ingredients
  - ▶ 700g non-glutinous rice (멥쌀 – mepssal) such as Nishiki or Calrose Botan
  - ▶ 350g nuruk starter culture
  - ▶ 3500ml soft water, plus more for rinsing and soaking
- ▶ Process
  - ▶ Rinse rice until rinse water becomes less cloudy (does not have to be clear)
  - ▶ Soak rice for 8 hours
  - ▶ Bring 3000ml water to boil
  - ▶ Drain rice, combine with 500ml water, and blend in blender or Ninja/Vitamix
  - ▶ Turn boiling water to low and pour in blended rice water, stirring continuously
  - ▶ When mixture becomes a thick porridge from rice starches, remove from heat
  - ▶ When cool, mix in 350g nuruk and stir for 5 minutes until mixture becomes soupy
  - ▶ Transfer to fermentation vessel and allow to ferment for 3-4 days

## Beombeok (범벅)



Blended rice added to boiled water

## Adding and mixing in nuruk



Immediately after adding nuruk



Smoother after stirring 5 minutes

# Mitsul fermentation



Stir once per day





# The deutsal second addition

- ▶ Deutsal ingredients
  - ▶ 2.8kg short grain glutinous / sweet rice (찰쌀, chapssal)
- ▶ Process
  - ▶ Rinse the rice and soak it for 4 hours
  - ▶ Allow the rice to drain for 30 minutes
  - ▶ Steam (not boil!) the rice for 40 minutes, remove from heat, rest for 10 minutes
  - ▶ While steaming, coarsely strain the mitsul to remove the solids from the nuruk
  - ▶ Cool the steamed rice (spread on sheet trays with parchment paper or damp cloths)
  - ▶ Add the cooled rice to the strained mitsul and gently stir / break up the rice with your hand
  - ▶ Allow to ferment for 20-30 days, stirring once about 3 days into fermentation

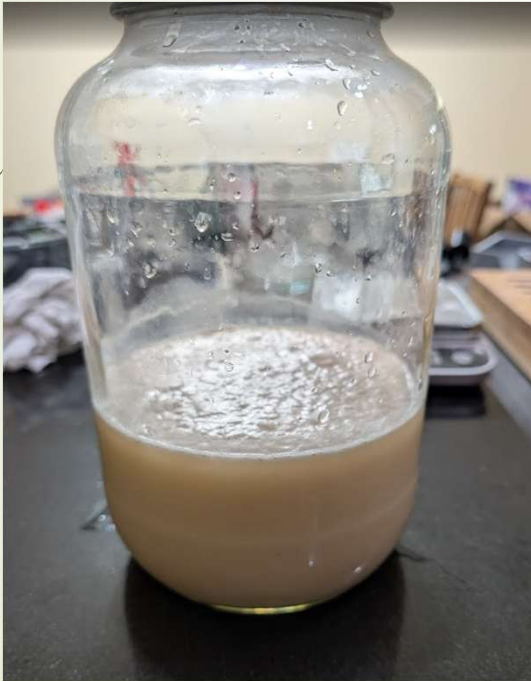
Steam rice and allow to cool down on baking sheet



Strain solids from mitsul starter



Combine cooled steamed rice with liquid starter and begin secondary fermentation



Yeast, bacteria, and enzymes work together to convert & ferment rice starch



Day 2



Day 3



Day 12

Strain solids from wonju and collect liquid



## Final preparation: chilling & dilution



- ▶ Age the tekju for several days in refrigerator
  - ▶ It will separate into clear liquid (cheongju) and solids
- ▶ Make makgeolli
  - ▶ Stir to recombine tekju
  - ▶ Experiment with water dilutions between 1:1 to 2:1 tekju to soft water or more
  - ▶ Leave warm for ~1 day to carbonate
  - ▶ Chill and enjoy
- ▶ Try the cheongju as-is
- ▶ Distill cheongju to make soju