

# Fluoride content of UK retail tea: comparisons between tea bags and infusions

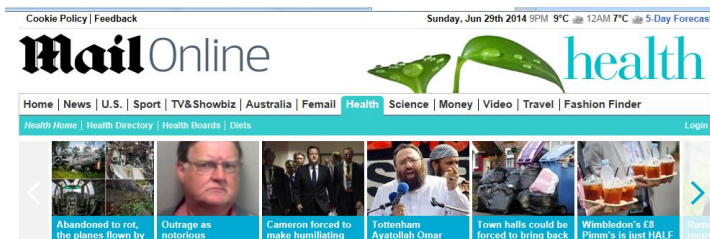
CHS Ruxton, Freelance Dietitian  
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# BACKGROUND

- 2013 paper
- Measured fluoride in 38 retail tea bags, concluding that economy versions represented a risk...

*“Excess fluoride in the diet can lead to detrimental health effects such as fluorosis of the teeth and skeletal fluorosis and consuming economy branded tea will lead to exposure”.*

*Chan et al. (2013)*



The screenshot shows the MailOnline Health section. The main headline reads: "Could cheap tea bags make you ill? Study reveals they contain high fluoride levels that could damage teeth, bones and muscles". Below the headline is a search bar and a list of bullet points summarizing the article's findings.

## Could cheap tea bags make you ill? Study reveals they contain high fluoride levels that could damage teeth, bones and muscles

- Fluoride is essential for bone and dental health but over 4mg per day can cause pain, muscle problems and joint and tooth disease in the long-term
- Study analysed fluoride levels in supermarket and branded tea bags
- Found that supermarket value brands from Tesco, Sainsbury's and Asda and Morrisons provided 75% to 120% of your daily intake of substance
- Experts are now calling for fluoride levels to be stated on food packaging



The Elsevier logo is on the left. To its right, text reads: "Contents lists available at SciVerse ScienceDirect", "Food Research International", and "journal homepage: www.elsevier.com/locate/foodres". On the far right is a small image of the journal cover.

## Human exposure assessment of fluoride from tea (*Camellia sinensis* L.): A UK based issue?

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## DRAWBACKS OF CHAN et al

- Brewed tea for 2 minutes – longer than the typical brewing time of 30-40 seconds
- Added 2g dry tea to 100ml water – more concentrated than a typical tea bag in a cup or mug (3.125g in 200-250ml water)
- Compared estimated F- intake with the US Dietary Reference Intake of 4 mg/d rather than the EU safe upper level of 7mg/d.

## FLUORIDE RISKS v. BENEFITS

- Dental fluorosis (1-6% prevalence UK)
- Cosmetic impact



- Skeletal fluorosis rare in UK, mainly in countries with high F- in water.

- Stronger tooth enamel
- Inhibits demineralisation

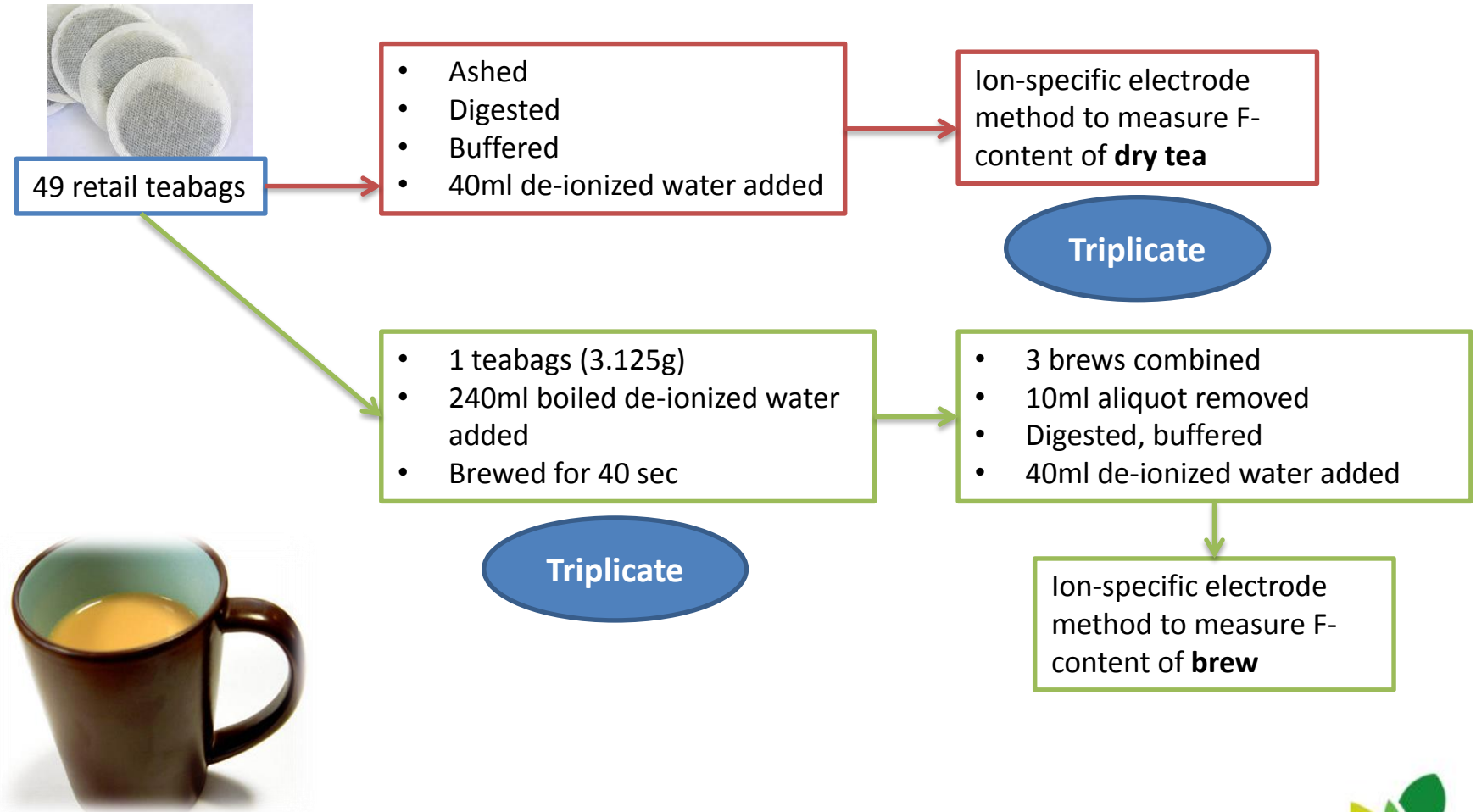
### EU Health Claims

Fluoride strengthens the teeth/enamel;

- Fluoride helps protect the teeth;
- Fluoride helps the teeth recover after meals.

Fluoride contributes to the maintenance of healthy teeth/tooth mineralisation.

# MATERIALS AND METHODS



# RESULTS



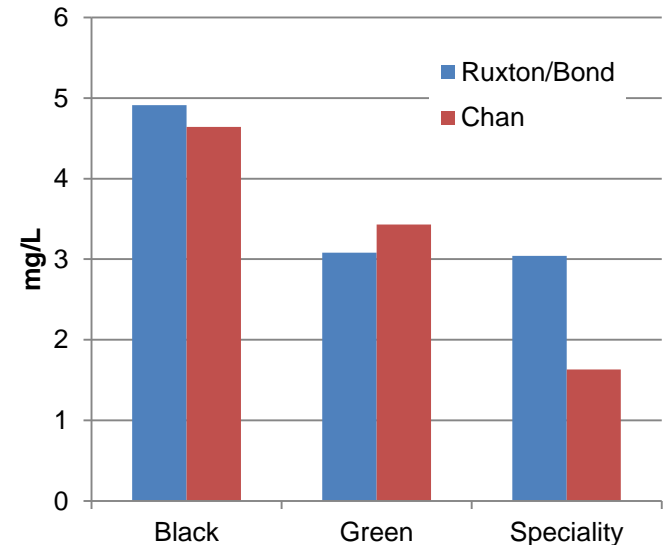
## Dry weight tea

- Black blended 1164 mg/kg
- Speciality/single estate 877 mg/kg
- Decaffeinated 1464 mg/kg
- Figures > Chan which used ion chromatography
- In line with other studies for older (2000 mg/kg) and younger (250 to 300 mg/kg) tea leaves.



## Tea infusions

- Similar findings to Chan for black and green.



# CONSUMPTION OF F- FROM TEA

## Average tea consumption

NDNS (2000)

Adults = 540ml

Older adults = 662ml

+ F- water @ 1ppm

X

## Average F- content of black blended tea

= 4.91 mg/L

= 1.18 mg/serving

*Compared with:*

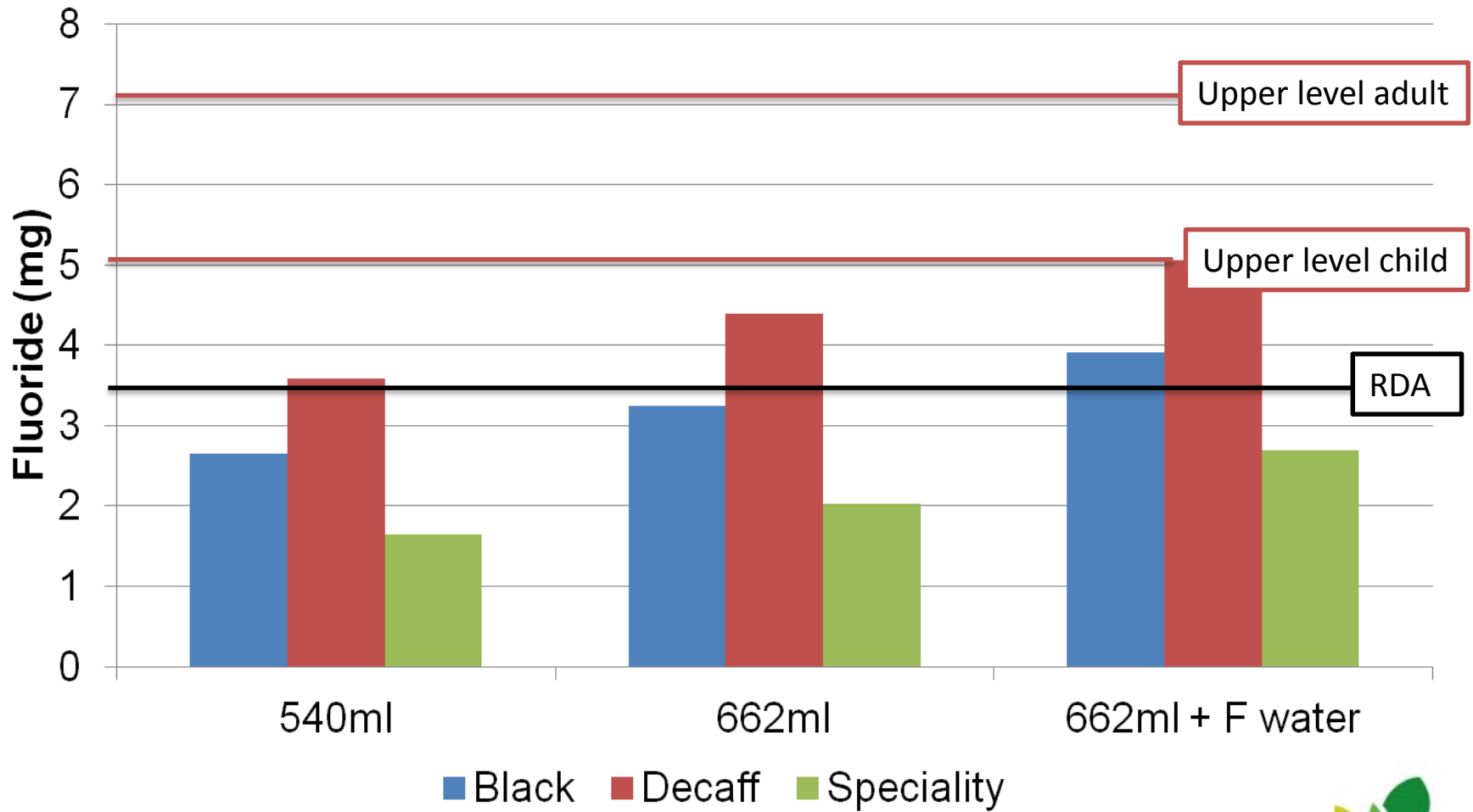
Recommended Daily Allowance (RDA) = 3.5mg

EU upper safe level = 7mg/day (adults)

EU upper safe level = 5mg/day (children 9-14 y)



# AVERAGE F- CONTENT OF BLACK BLENDED TEA





## 2014 NDNS

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- Average daily tea intake = 395 ml
- 95<sup>th</sup> centile of intake = 1155 ml
- Therefore, likely F- intakes from tea still less than upper level
- Updated analysis submitted for publication

## CONCLUSION

- Current intakes of tea are unlikely to provide fluoride intakes that exceed safe limits for adults and children
- However, current intakes of tea do not provide enough fluoride to meet the RDA
- Therefore, potential dental health benefits of fluoride cannot be accessed unless tea consumption increases to 3-4 servings/d from present intake of 1-2 servings/d.

**The Tea Advisory Panel:** The Tea Advisory Panel is supported by an unrestricted educational grant from the **UK TEA COUNCIL**, the trade association for the UK tea industry. The Panel has been created to provide media with impartial information regarding the health benefits of tea. Panel members include nutritionists; dieticians and doctors. For further information please call **0207 7052 8989**.

[www.teaadvisorypanel.com](http://www.teaadvisorypanel.com)

