



# Fuji Triage

from GC.

Simple and serious  
protection for teeth **at need.**  
Seals, protects and fortifies teeth.

**'GC.'**

New name – From Fuji VII to Fuji Triage

## GC Fuji VII – why so popular amongst dentists

- **Nice handling, good flow**
- **Moisture tolerant**
- **Good clinical results**
- Especially used in the fissure protection indication where bonding or etching is not needed when using Fuji VII

## However, more and more requests

- For a white version
- For powder to liquid packaging...



# Fuji Triage means more choice

## Choice of

- Pink or white shade
- Mixing technique: hand mixed or encapsulated
- Curing technique: light cure or chemical set - no difference in physical properties

## Choice of

- Specific clinical applications
- Non invasive techniques

## A true Minimum Intervention product

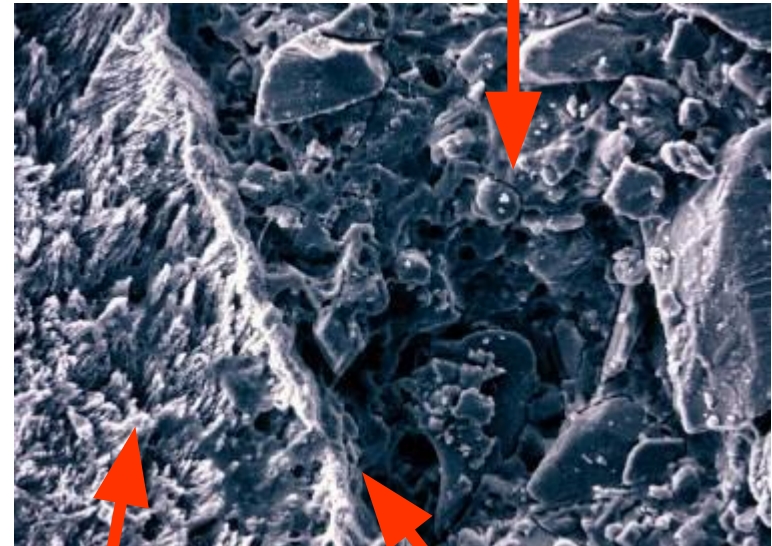


# Fuji Triage - Seals, protects and fortifies teeth

## What is surface protection?

- Application of a thin layer of glass ionomer to tooth surfaces at increased risk
- To create a hardened tooth surface
- To form a more acid-resistant ion exchange layer which acts as additional protection for the tooth

Стеклоиономерный цемент



Dr. H. Ngo

Эмаль

Ионообменный слой

# Fuji Triage - Seals, protects and fortifies teeth

## The perfect GIC for tooth surface protection

- Flowable
- Moisture tolerant
- High Fluoride release



## Acts as a protective coating once set

- Prevents acid contact with tooth
- Difficult for plaque to adhere to Fuji Triage



1. Composition
2. Characteristics
3. Indications
4. Procedure
5. Packaging and pricing
6. Physical properties
7. Sales arguments

**Fuji Tri**  
from GC



**'GC'**

# Fuji Triage

from GC.



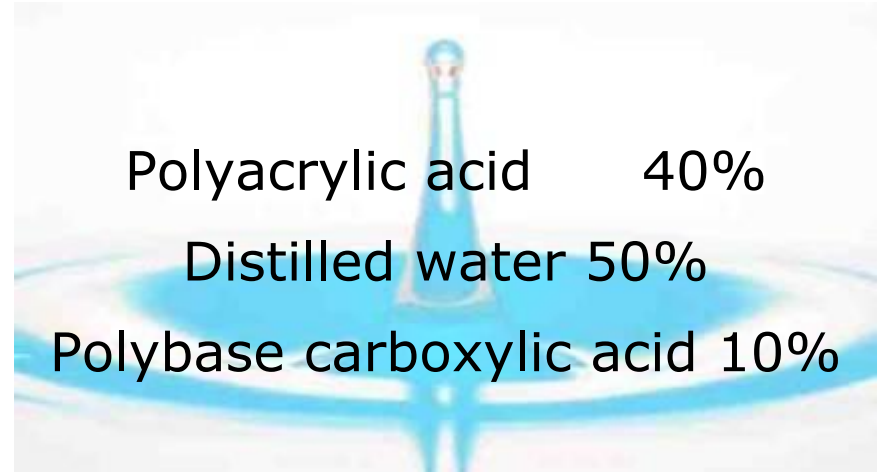
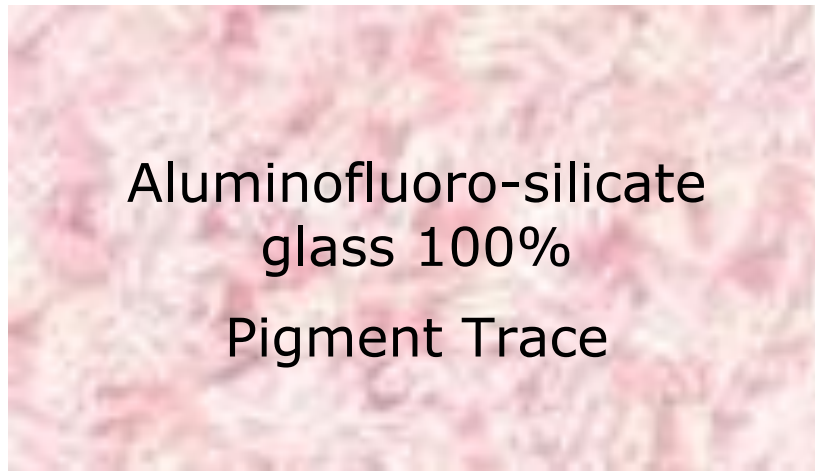
## 1. Composition

**GC**

# Fuji Triage – Composition

## Conventional GIC in composition

- Two components
- H<sub>2</sub>O containing
- No resin reinforcement





# Fuji Triage

from GC.



## 2. Characteristics

**GC**

# Fuji Triage – Characteristics

## General features

- Self curing conventional GIC
  - Easy to apply
  - No etching, no bonding
  - Chemical adhesion to tooth structure
  - No addition of resins
- Moisture tolerant
  - Stable adhesion also when saliva control is not possible
- Low viscosity
  - Easy to apply
- Very high level of fluoride release
  - Protection



# Fuji Triage – Characteristics

## Fluoride release

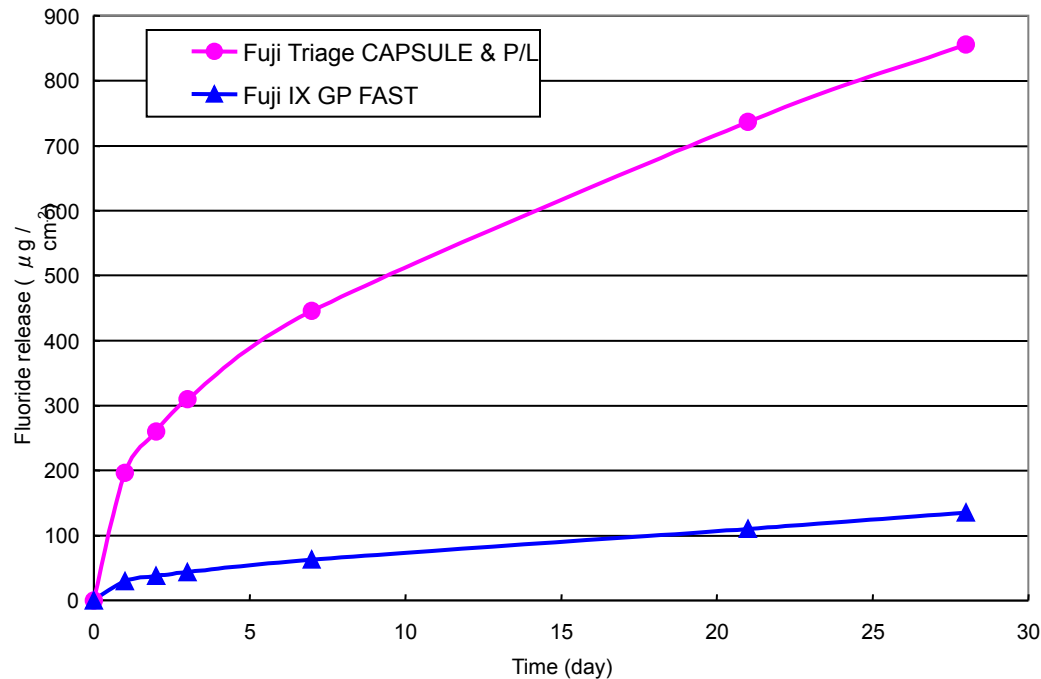


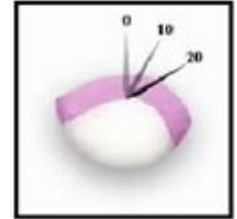
Fig. Fluoride release of Fuji Triage CAPSULE and Fuji IX GP FAST

Six times higher Fluoride release than packable GIC's

# Fuji Triage - Characteristics

## Translucent pink shade

- Optional Command set with VLC unit
- For early protection against de-hydration
- Visible control during recalls: diagnostic marker
- Communication tool



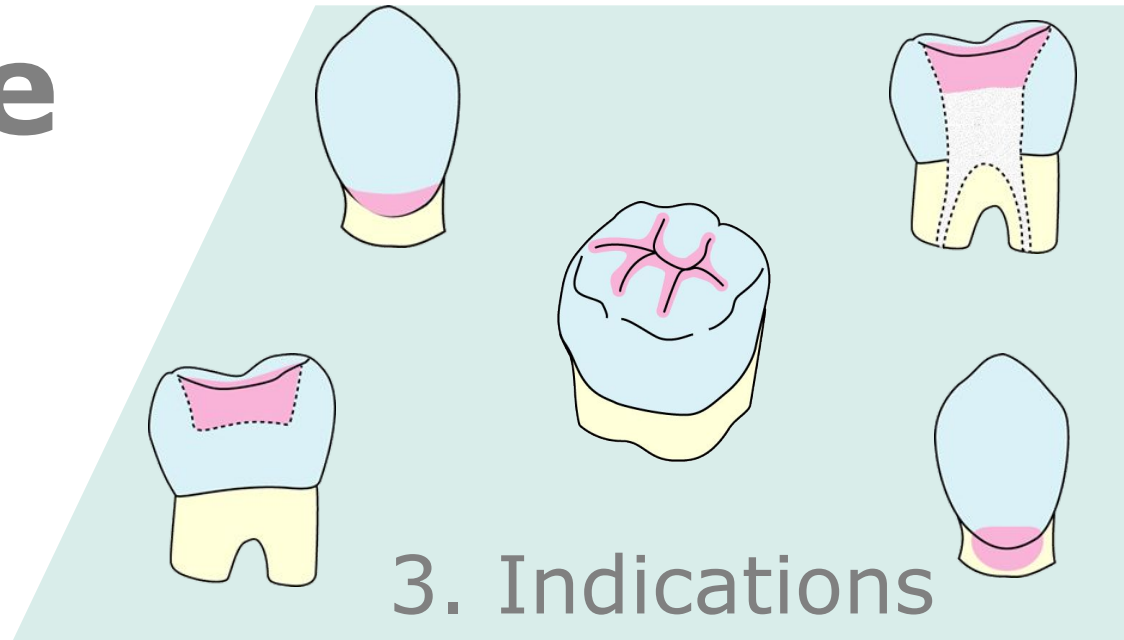
## White shade

- For aesthetic demand / anterior protection



Dr G Milicich

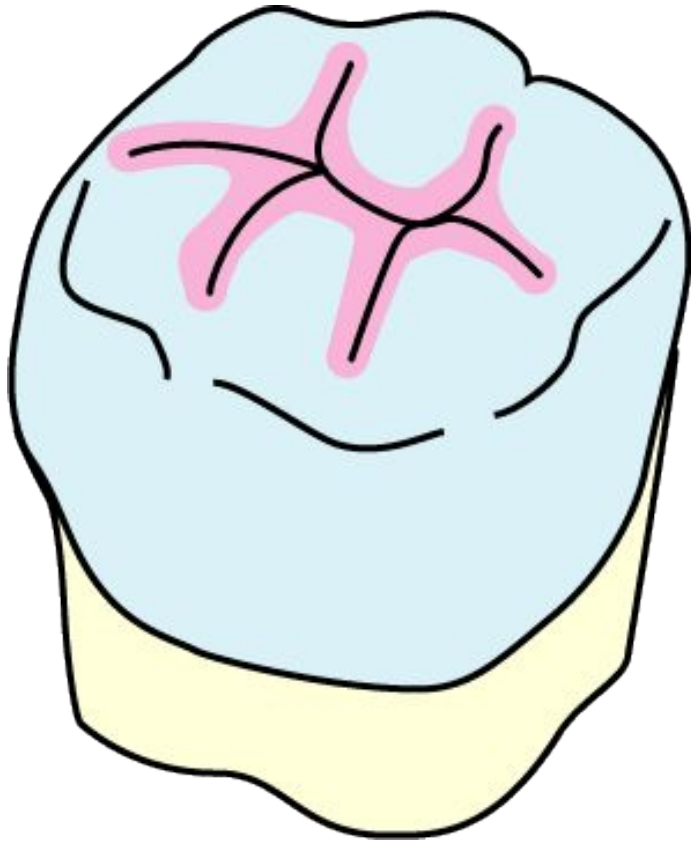
# Fuji Triage from GC.



**GC**

# Fuji Triage - Indications

## Main indication



Fissures of newly erupted molars

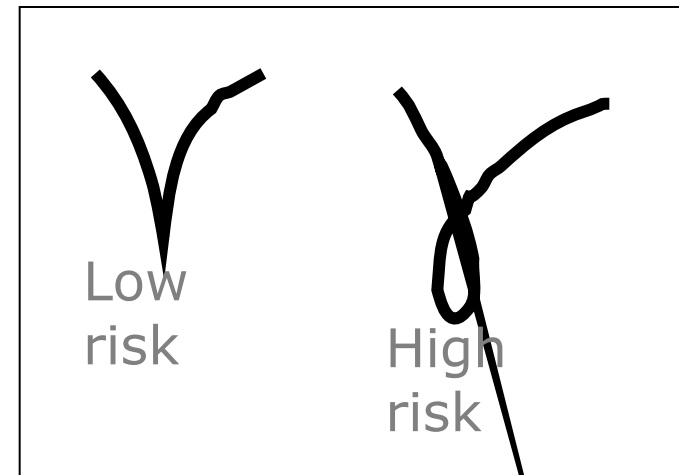
# Fuji Triage - Indications

## Fissures of newly erupted molars

- Two major intra-oral key factors for occurrence of cariogenic micro organisms
  - Stage of eruption / functional usage of teeth
  - Tooth specific anatomy



Newly erupted molar

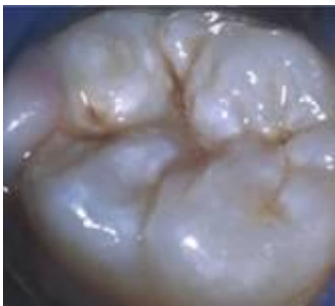


Fissure anatomy

# Fuji Triage - Indications

## Fissures of newly erupted molars

- Erupting molars are more likely to develop caries due to very unfavourable intra oral conditions
  - No functional usage over a long period of time / **no natural removal of plaque**
  - Newly erupted molars have **immature outer enamel** and are consequently **more vulnerable to acid attack**
  - Difficulties to keep clean by brushing
- This uncertain situation can last for molars between 1 to 1.5 years!



Caries formation

**Protection is needed!**



Caries in newly erupted molar



# Fuji Triage - Indications

## Possible reasons for failure of sealants

Molars 1 – 1.5 years

Eruption period

Caries can start

- Difficult to diagnose
- Seal hidden caries?
- Moisture control?

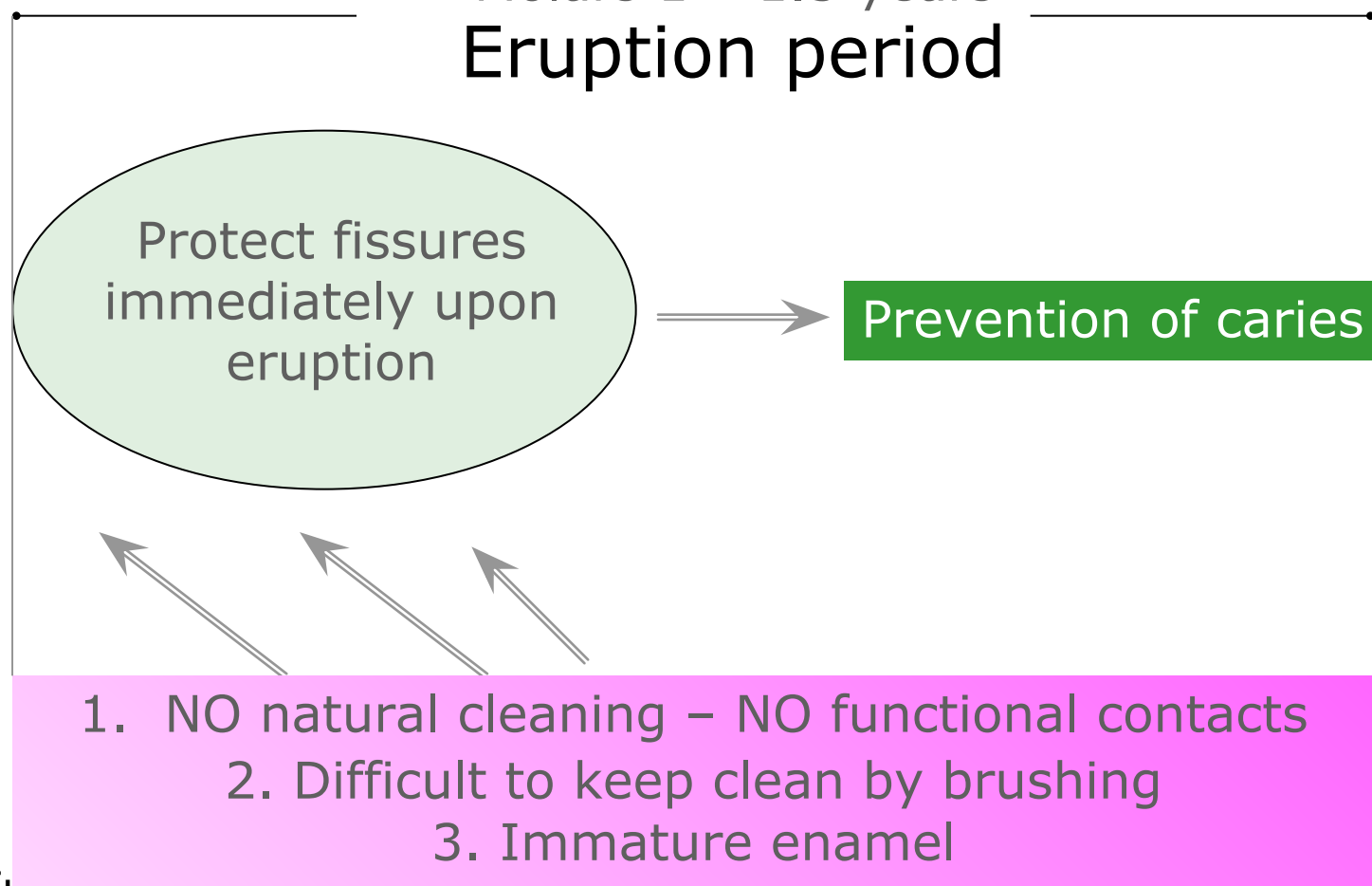
1. NO natural cleaning – NO functional contacts
2. Difficult to keep clean by brushing
3. Immature enamel

# Fuji Triage - Indications

## A new approach for fissure protection

Molars 1 - 1.5 years

Eruption period



# Fuji Triage - Indications

## Fissure protection



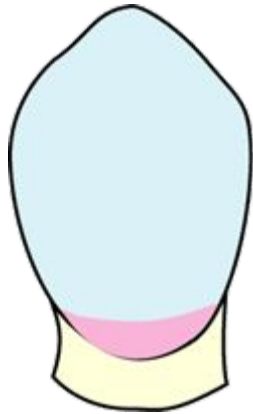
Molar at risk



End result

# Fuji Triage - Indications

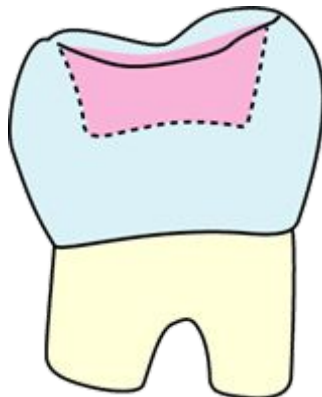
Additional indications: more and more users



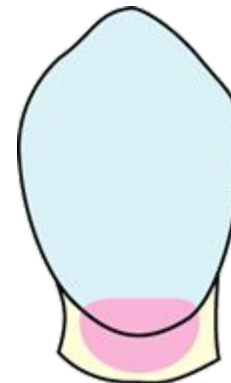
Dentine hypersensitivity



Temporary restoration of endodontic access



Intermediate restoration



Root surface protection

# Fuji Triage - Indications

## Dentine hypersensitivity

- Offering instant long-lasting relief



6 months



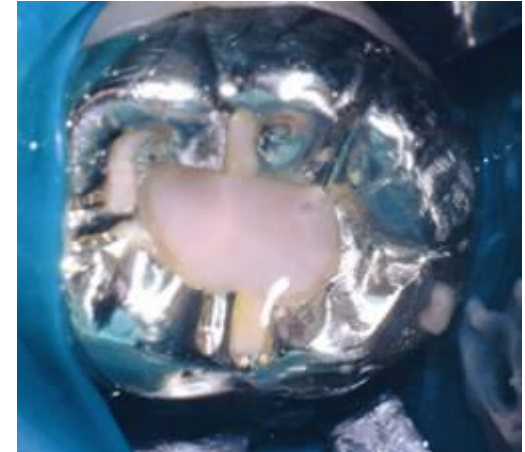
12 months

Fuji Triage is still in place

# Fuji Triage - Indications

## Temporary restoration of endodontic access - key to success

- Coronal leakage is an important cause of root canal treatment failure (Bobotis, 1989)
- 48.6 % periradicular inflammation when poor temporary restoration versus “only” 30.2 % periradicular inflammation when poor endodontics (Ray and Trope, 1995)
- “Glass ionomer and resin-modified glass ionomer restorative material provide a better coronal seal against *Streptococcus Mutans* than Zinc oxide / eugenol” (Seiler, 2006)



|             | Nb of leaking specimen | Mean day of start of leakage |
|-------------|------------------------|------------------------------|
| IRM         | 10                     | 10.0                         |
| Fuji Triage | 4                      | 23.3                         |

# Fuji Triage – Indications

## Intermediate restoration to stabilise caries

- Sealing caries at the preliminary stage before making a decision on next course of treatment
- For use on all tooth surfaces to provide a seal to halt the progress of caries
- Special application in situations of rampant caries or caries in xerostomia patients
- Particularly useful for elderly, caries prone and dental phobic patients



Dr. H. Ngo

Use slow handpiece or hand instrument and leave 2 mm clear margins at the periphery

# Fuji Triage – Indications

## Protection of exposed root surfaces

- Protects older patients more at risk for developing root surface caries
  - reduced saliva flow
  - diminished buffering and poor remineralisation capacities



Dr. H. Ngo

Application of thin layer of glass ionomer



# Fuji Triage - Indications

## Triage definition

- “A process for sorting injured people into groups based on their need for or likely benefit from immediate medical treatment. **Triage is used** in hospital emergency rooms, on battlefields, and at disaster sites **when limited medical resources must be allocated.**”



# Fuji Triage – Summary of indications

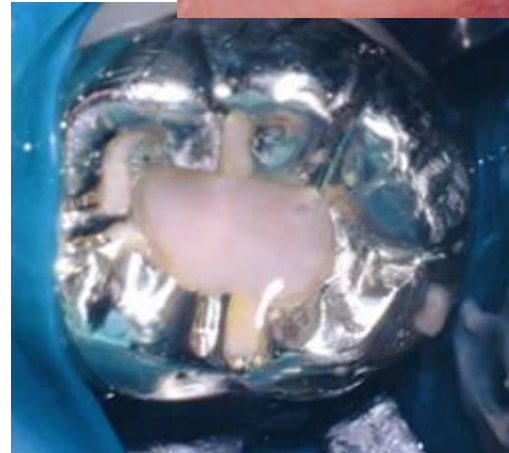
## For emergency situations

- Immature enamel – newly erupted molars
  - Protection when it is most needed
- Dentine hypersensitivity
  - Good immediate remedy to relieve pain
- Access cavity restorations in endodontics
  - Better sealing for successful endodontic treatments
- Temporary sealing of open cavities – intermediate restoration
  - Maintain tooth structure when prognosis is uncertain – gain time
  - Stabilisation material: create a mineralising seal, e.g. after use of Heal Ozone



# Fuji Triage - Summary of indications

## For emergency situations



# Fuji Triage

from GC.



4. Procedure

**GC**

# Fuji Triage - Procedure

## Procedure



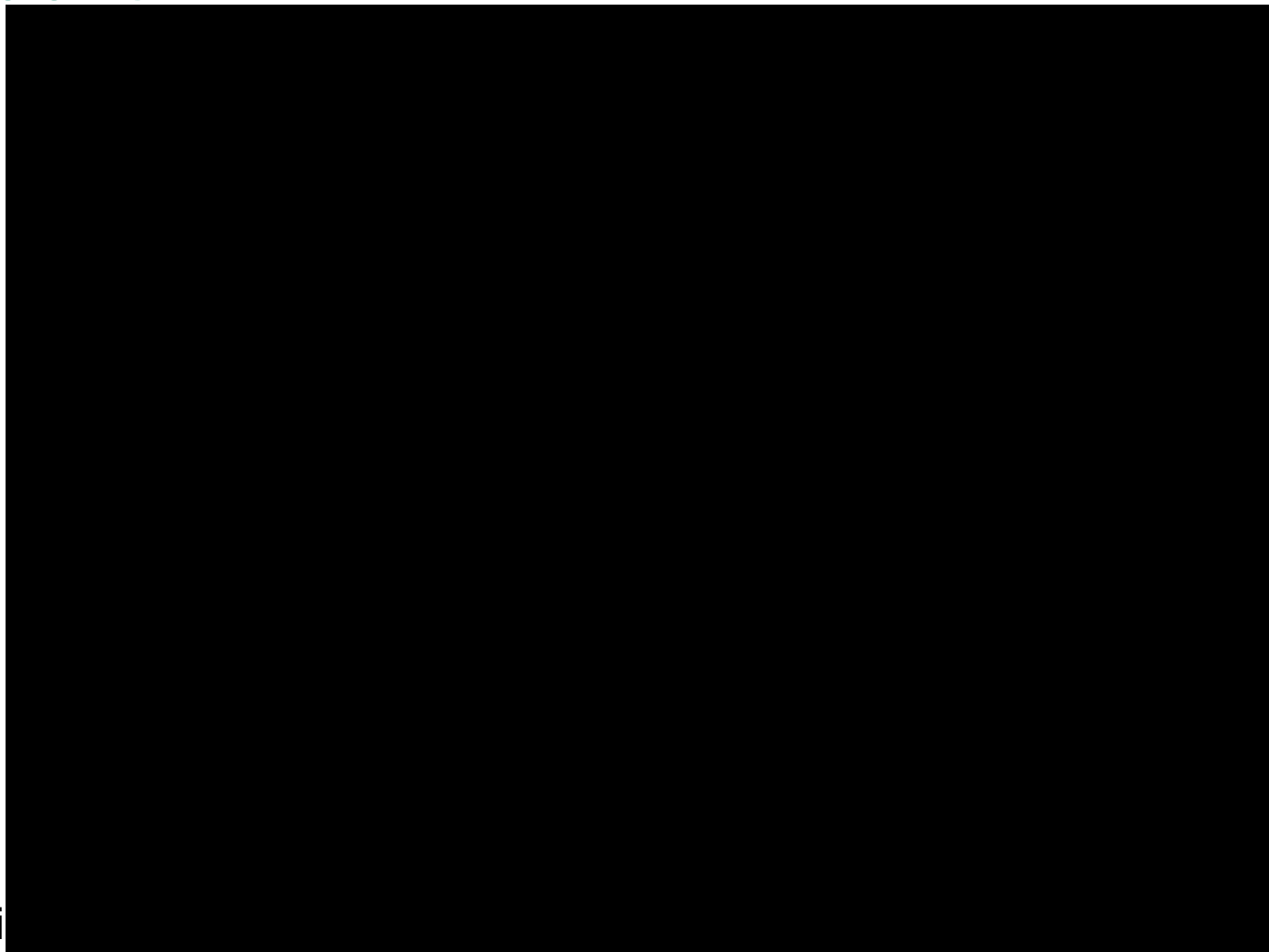
# Fuji Triage - Procedure

## Procedure



# Fuji triage – Procedure

## Procedure



# Fuji Triage from GC.



5. Packaging and pricing

**'GC.'**



# Fuji Triage - Packaging and pricing



## Fuji Triage Capsules

- 50 Capsules
- (mixed volume per capsule 0.13 ml)

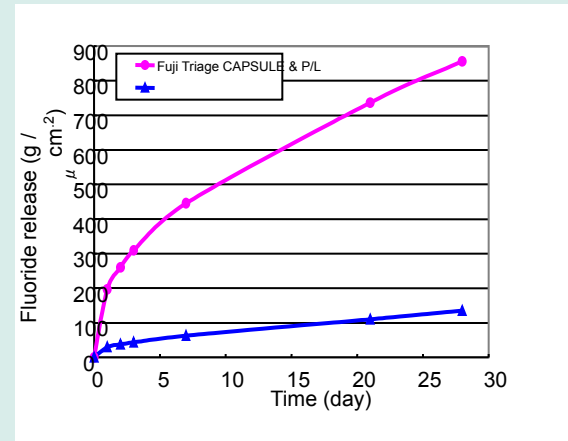


## Fuji Triage P/L

- 15 g powder
- 10 g (8 ml) liquid
- 6 g (5.7 ml) Dentin Conditioner
- powder scoop
- mixing pad

| Article number | Article description                      |
|----------------|--|
| 002495         | GC Fuji Triage Pink, box of 50 capsules  |
| 002496         | GC Fuji Triage White, box of 50 capsules |
| 002490         | GC Fuji Triage Pink, 1-1 pack            |
| 002491         | GC Fuji Triage White, 1-1 pack           |

# Fuji Triage from GC.



## 6. Physical properties

**'GC.'**

# Fuji Triage - Physical properties (1)

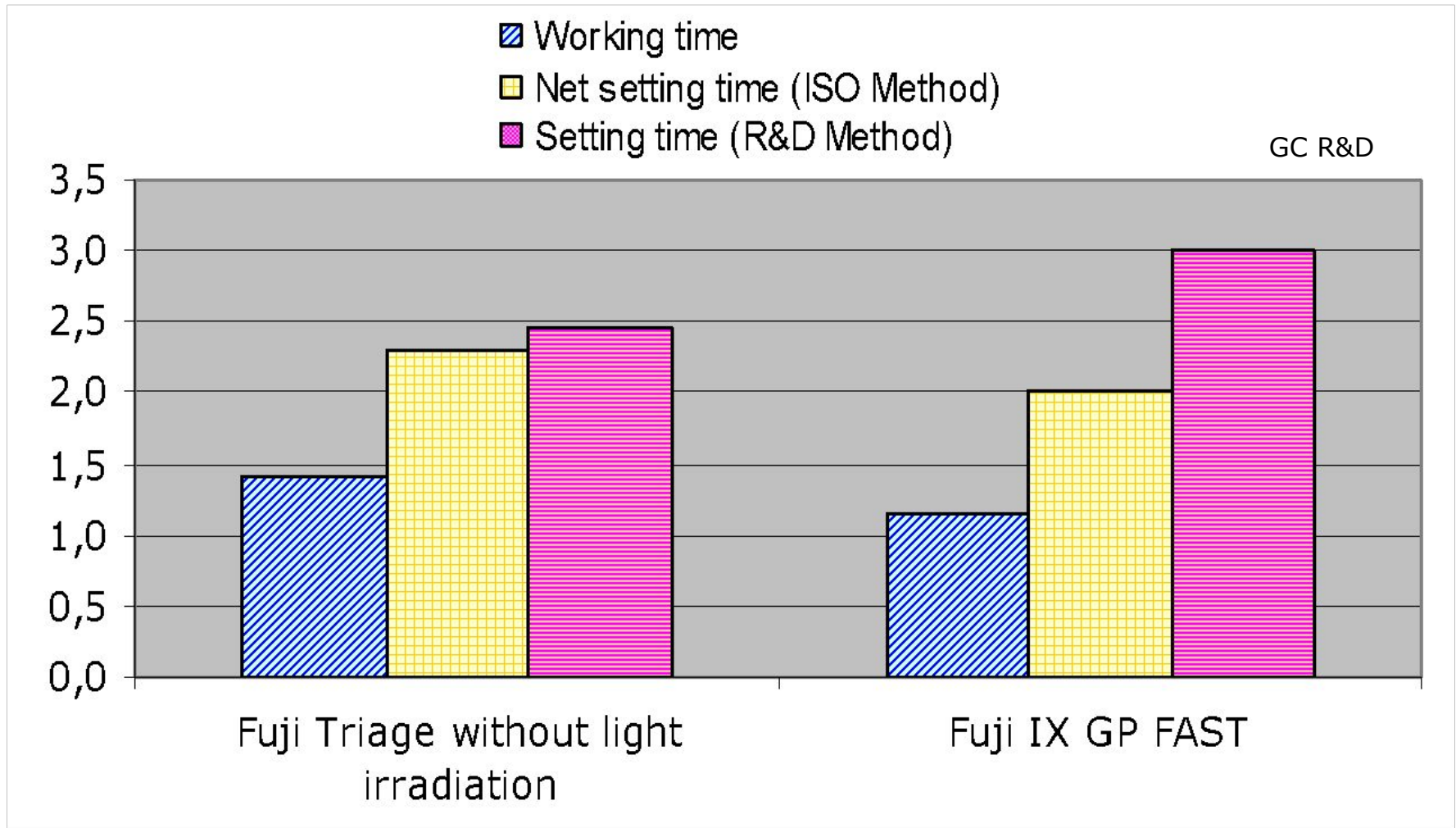
|                             |                           | Capsules      | P/L           |
|-----------------------------|---------------------------|---------------|---------------|
| Powder / Liquid ratio (g/g) |                           | 0.30 / 0.15   | 1.8 / 1.0     |
| Net volume (ml)             |                           | 0,13          | NA            |
| Mixing Time                 |                           | 10'           | 20'-25'       |
| Working time                |                           | 1'40"         | 1'40"         |
| Setting time                | Without light irradiation | 2'30"         | 2'30"         |
|                             | With light irradiation    | 0'20" - 0'40" | 0'20" - 0'40" |
| No water sensitivity after  | Without light irradiation | 3'00"         | 3'00"         |
|                             | With light irradiation    | 2'00"         | NA            |

# Fuji Triage - Physical properties (2)

|  |               | Capsules  | P/L       |
|--|---------------|-----------|-----------|
| Compressive strength (Mpa)                       | After 1 hour  | 100 (8)   | 100 (8)   |
|  | After 1 day   | 159 (6)   | 173 (6)   |
|  | After 7 days  | 171 (21)  | 189 (15)  |
| Adhesive strength*<br>(Mpa, After 1 day)         | Bovine enamel | 7.0 (0.9) | 7.6 (1.7) |
|  | Bovine dentin | 6.0 (0.3) | 6.3 (1.4) |
| Surface hardness (Hv)                            | After 1 hour  | 26 (1)    | 29 (4)    |
|  | After 1 day   | 39 (1)    | 40 (3)    |
|  | After 7 days  | 48        | NA        |
| Radiopacity (mm)                                 |               | 2.4       | 2.8       |
| Fluoride release ( $\mu\text{g} / \text{cm}^2$ ) | After 1 day   | 197       | 183       |

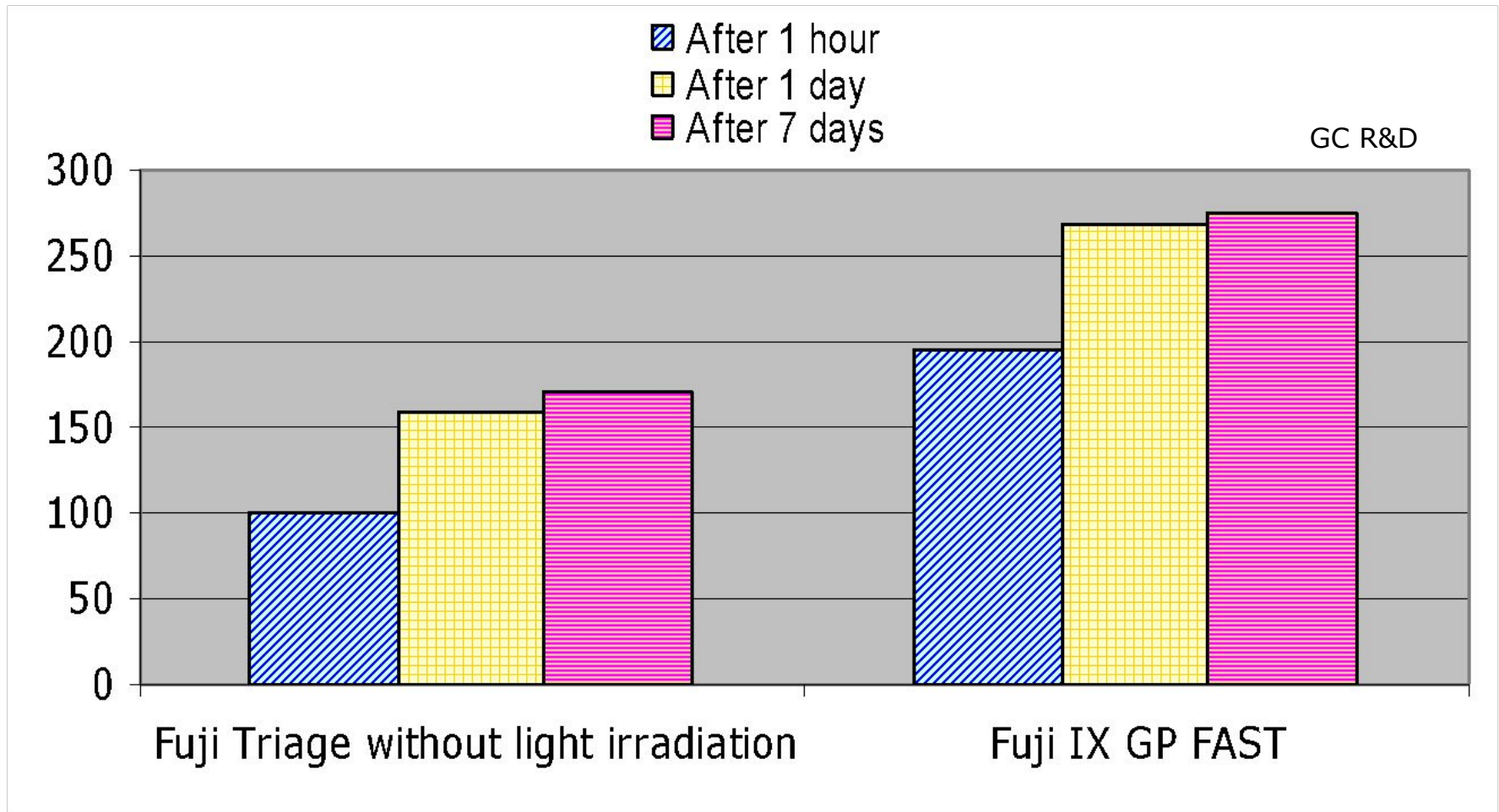
# Fuji Triage – Physical Properties

## Working and setting times in min.



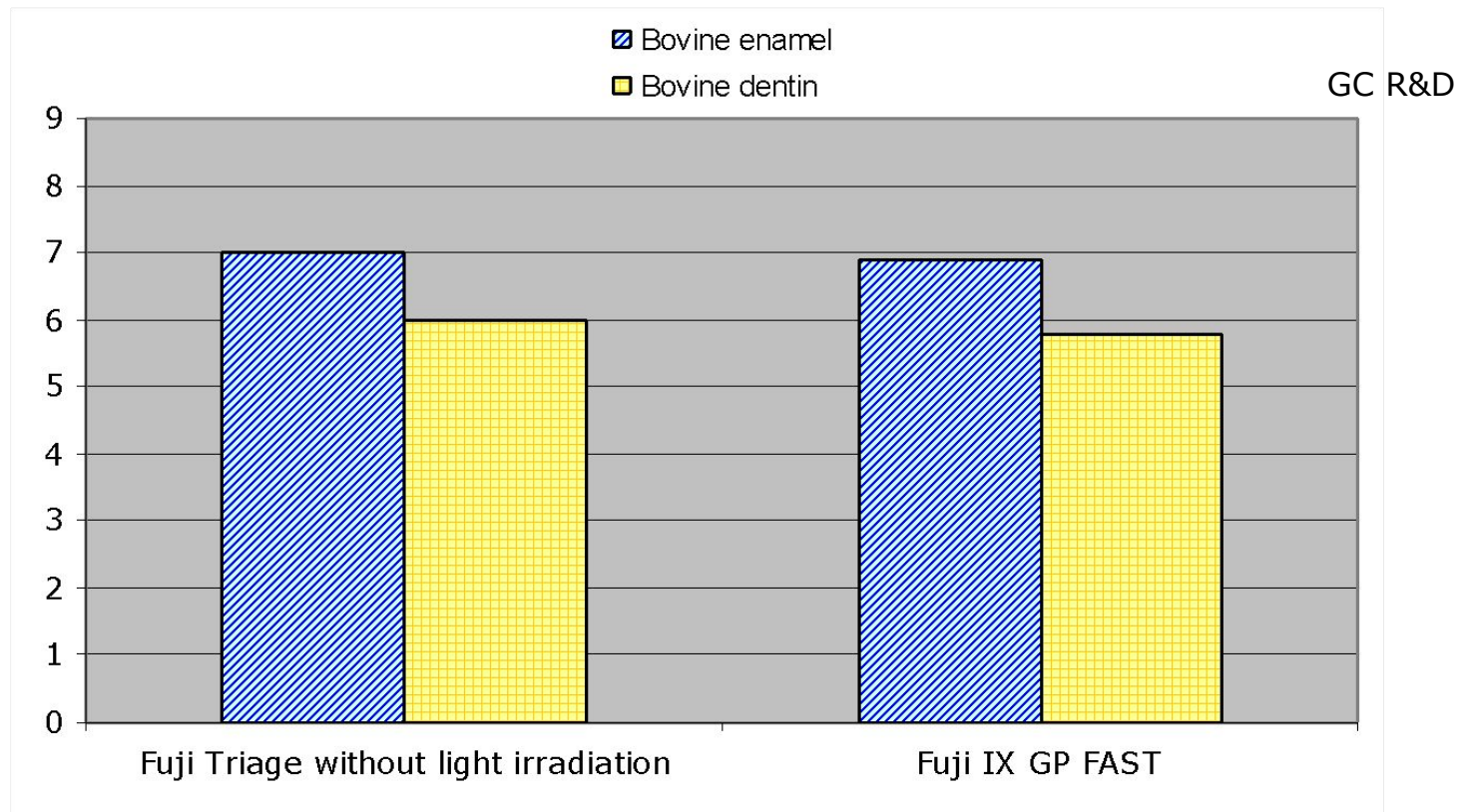
# Fuji Triage – Physical Properties

## Compressive strength in MPa



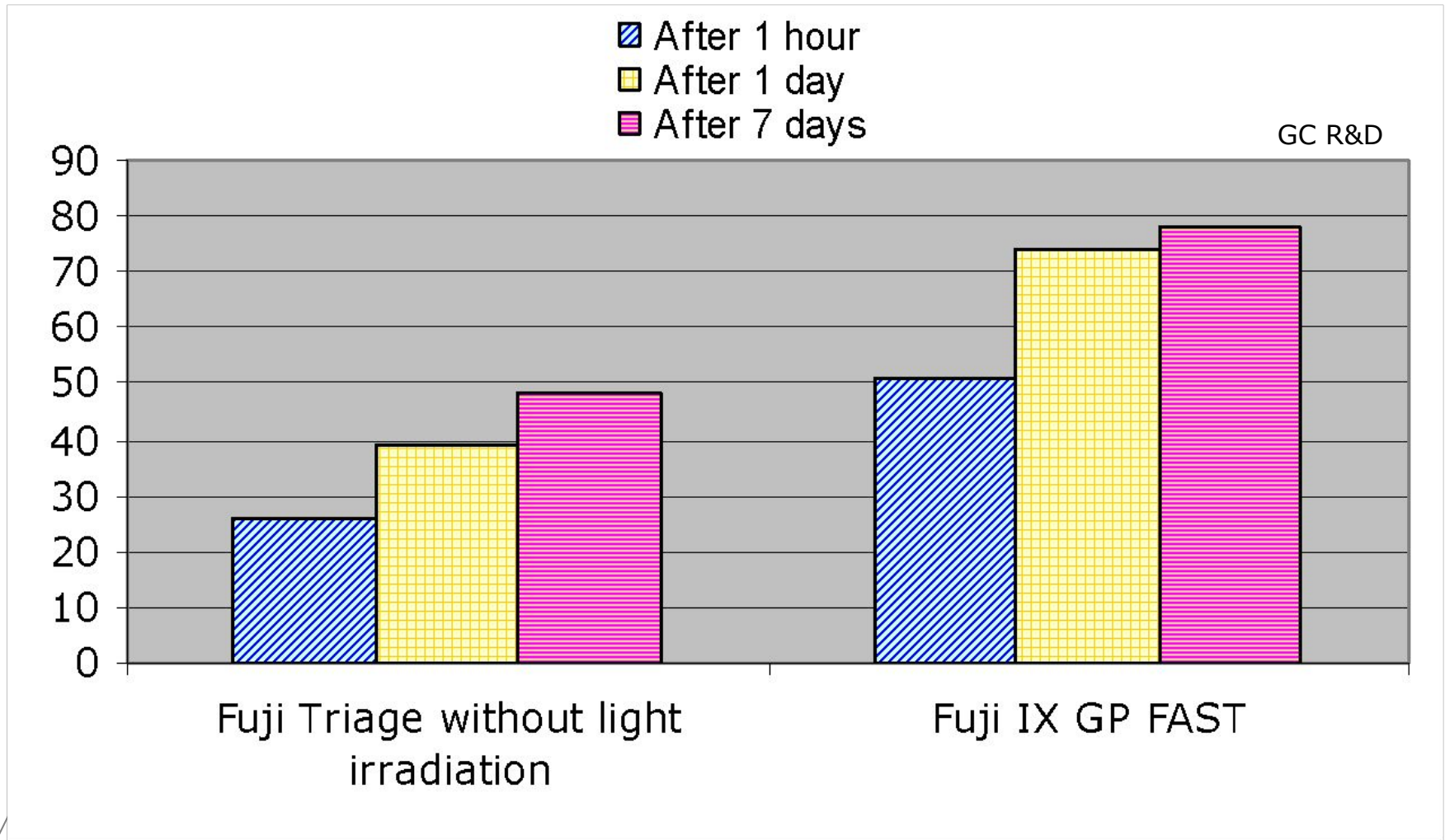
# Fuji Triage - Physical Properties

## Adhesive strength in MPa



# Fuji Triage – Physical Properties

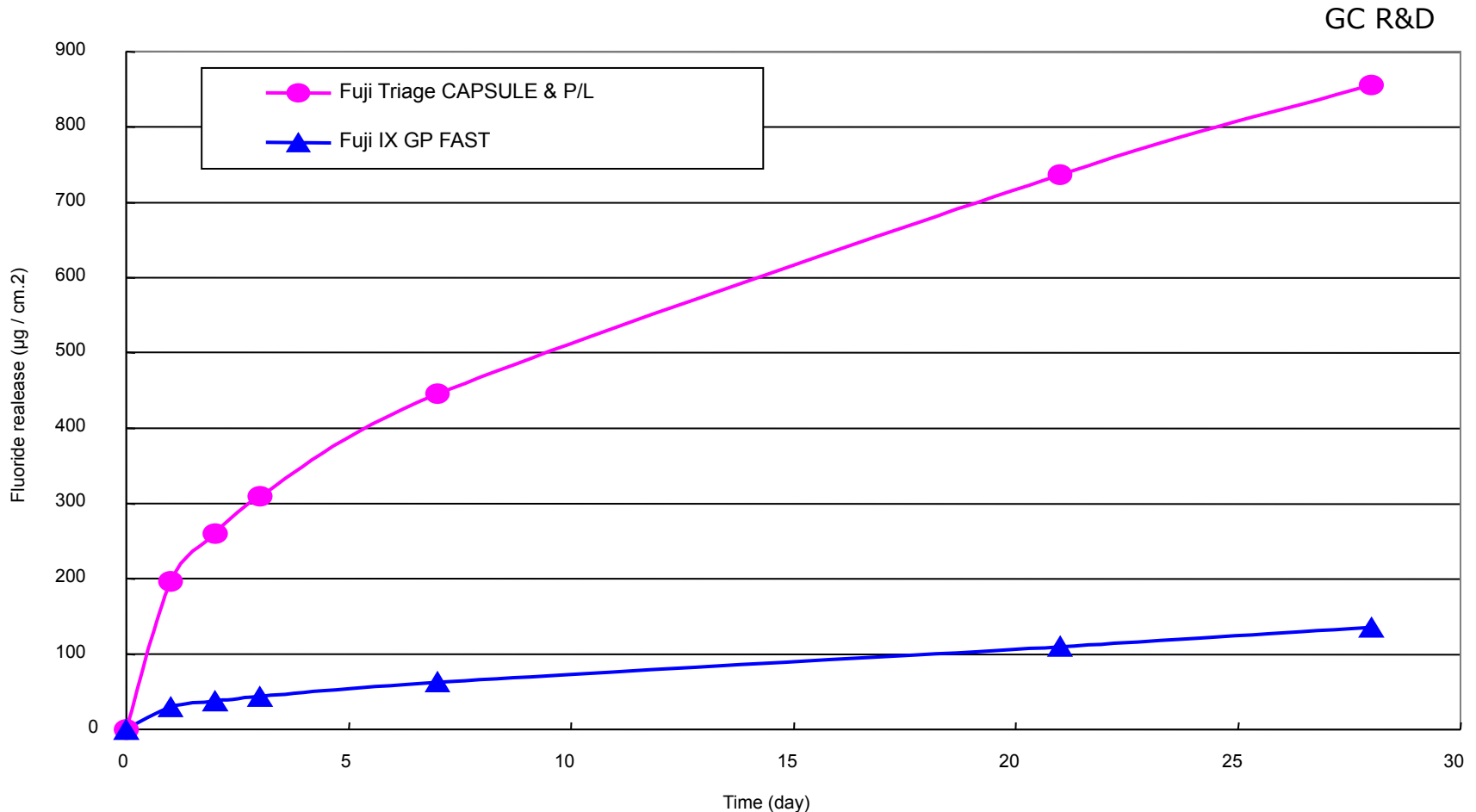
## Surface hardness Hv





# Fuji Triage – Physical Properties

## Fluoride release in $\mu\text{g} / \text{cm}^2$



# Fuji Triage – Physical Properties

## Antibacterial effect

### **0415** Antibacterial effect of various glass ionomers. M.C. PETERS\*, M. JIMENEZ, G.E. POORT, and J.C. FENNO, University of Michigan, USA

Objectives: Several studies have demonstrated the antibacterial effect of glass ionomers (GIs) on the major pathogens causing dental caries. These antibacterial properties of GIs have been attributed to both the high concentrations of fluoride and to the low pH of these materials. The purpose of this in-vitro study was to examine the inhibiting effect of several GI restorative materials on bacterial growth. Methods: Using the agar diffusion test antibacterial activities of 4 GIs, Fuji IX (F9, auto-cure:AC), Fuji II LC (F2, light-cure), PhotacFil Quick (PF, LC) and one experimental GI (EXPA in AC and EXPL in LC mode) were evaluated against the cariogenic *S. mutans* (clinical isolate) and *S. sobrinus* 6715. 1% Glutaraldehyde was used as control. The bacteria were grown in BHI broth or agar at 37 degrees under anaerobic conditions. Overnight broth cultures were concentrated 10x, and 0.1ml was spread over the surface of each agar plate. Wells of 6mm in diameter were punched and filled with material plugs, prepared according to manufacturer's recommendations. After 24 hours incubation the inhibition zone was measured. Results: The greatest inhibitory area (mm diameter/SD) was produced by the control(11.65/0.77) followed by EXPA (9.28/0.68) and F9(9.07/0.62), EXPL(8.08/0.52), F2 (7.24/0.29) and PF(7.03/0.02). Conclusion: The AC materials showed greater inhibition than the LC materials. When compared to F2 and PF, both EXPA and F9 showed a significantly larger inhibitory effect against *S. mutans* and *S. sobrinus*.

# Fuji Triage – Physical Properties

## Antibacterial effect



Fuji IX GP

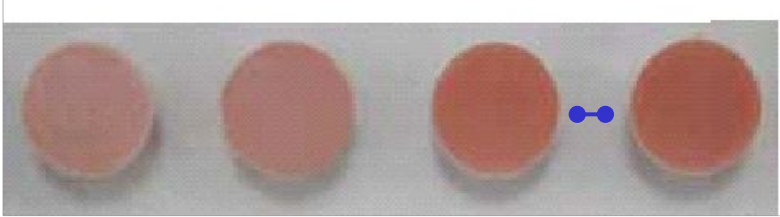


Fuji Triage

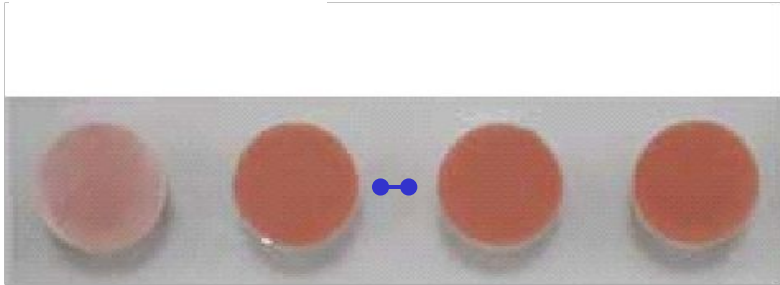
Hien Ngo, April 2002

# Fuji Triage – Physical Properties

## Water sensitivity



Fuji Triage - No light irradiation



Fuji Triage - With light irradiation



Fuji IX GP Fast

1'      2'      3'      4'

# Fuji Triage – References

## Available literature references: 23

The screenshot shows a Microsoft Internet Explorer browser window with the address bar displaying [http://www.gceurope.com/pid/16/literature/literature\\_16.pdf](http://www.gceurope.com/pid/16/literature/literature_16.pdf). The browser interface includes a menu bar (File, Edit, Go To, Favorites, Help), a toolbar with navigation buttons (Back, Forward, Stop, Home, Search, Favorites, Refresh, Print, Stop, Sign), and a status bar at the bottom showing 'Done' and 'Unknown Zone'. The main content area displays a PDF document with a pink graphic of a dental arch at the top. Below the graphic, the title 'GC Fuji VII Radiopaque glass ionomer protection and stabilisation material' is centered. Underneath the title, the text 'Literature (as of July 28, 2006)' is followed by a numbered list of 13 references. The references include authors, titles, and publication details such as 'Dental Town Magazine', 'Abstract PS - IADR', and 'Journal of Dentistry'. The browser's taskbar at the bottom shows the Start button, several icons, and the system tray with the time '15:18'.

**GC Fuji VII**  
**Radiopaque glass ionomer protection and stabilisation material**

Literature (as of July 28, 2006)

1. Geoff Knight. The fissure seal time bomb. Dental Town Magazine, July 2002, p.23
2. M. Dalgaard, M. Ngo, M. Frøser, J.M. McIntyre. An in vitro evaluation of the surface protective properties of Fuji VII on enamel and dentine. Abstract PS - IADR, October 2002, Sydney, Australia.
3. M.C. Peñero, M. Álvarez, G.E. Poort, J.C. Ferrero. Antibacterial effect of various glass ionomers. Abstract 0415 - 80<sup>th</sup> General Session of the IADR, 2002, San Diego, USA.
4. R.W. Laveland, L.D. Braga, S.S. Khajuria, T.J. Fritz, M.G. Duncan. Microleakage measurements by Digital Imaging of thermocycled esthetic restorative materials. Abstract 3959 - 80<sup>th</sup> General Session of the IADR, 2002, San Diego, USA.
5. T. Noguchi, S. Kato, S. Akahane. Comparison of the acid-resistance level of the dentine surface immersed with fluoride-releasing materials in artificial saliva. Abstract 196 - 81<sup>st</sup> General Session of the IADR, 2003, October, Sweden.
6. J.D. Astorch, K. Nasazi, R.G. Berg, J.W. Stenbery. Effect of laser activation on setting times of glass ionomers. Abstract 1963 - 81<sup>st</sup> General Session of the IADR, 2003, October, Sweden.
7. C.K.Y. Yau, F.R. Tay, H.M. King, D.H. Pashley, S.K. Sidiq, J. Neo, M. Tolstano, A. Wang. Interaction of conventional glass-ionomer cements with hydrated dentin. Abstract 0719 - 81<sup>st</sup> General Session of the IADR, 2003, October, Sweden.
8. G. Miklich. How to reduce composite polymerization shrinkage associated with direct posterior composites. Dental Town Magazine, April 2003.
9. G.P.S. Clifford. Reversal of caries using adhesion and sealer - Nine month results. Abstract 3467 - 82<sup>nd</sup> General Session of the IADR, 2004, Honolulu, Hawaii.
10. J. Hallens and E. Lynch. Reversal of occlusal caries using air abrasion, sealer, and sealer. Abstract 3468 - 82<sup>nd</sup> General Session of the IADR, 2004, Honolulu, Hawaii.
11. D.A. Covey, W.W. Johnson and L.R. Hopfer. Penetration of various pH and fluoride sealants into occlusal grooves. Abstract 3471 - 82<sup>nd</sup> General Session of the IADR, 2004, Honolulu, Hawaii.
12. K. Yamazaki, A. Aoyama, H.C. Ngo. Efficacy of Fuji 7 in preventing pits & fissure caries in Indonesian children. Abstract 0-48 - 20th IADR (South-East Asian Division) Meeting, September 1-4, 2005, Malacca.
13. F. Papadimitrakou, C. Ostrach, F. Triandouli, S. Sakaki, F. Morikawa, F. Garcia-Godoy, M. Ferrari. Microleakage bond strength to ground enamel by glass-ionomers, resin-modified glass-ionomers, and resin composites used as pit and fissure sealants. Journal of Dentistry (2005) 33, 459-467.

Fuji Triage - Simplicity itself

Easy to mix

Easy to place



Easy to finish

Easy to identify

# Fuji Triage

from GC.



7. Sales arguments

**GC**

# Sales argument - 1

Q: “Which product do you use for fissure sealing the partially erupted tooth in a high caries risk child?”

- In most the dentist will answer: NOTHING!
- ... or wait for the tooth to erupt because the dentist knows that a composite sealant cannot be placed before that, as there is a risk of recurrent caries or loss of retention due to moisture sensitivity

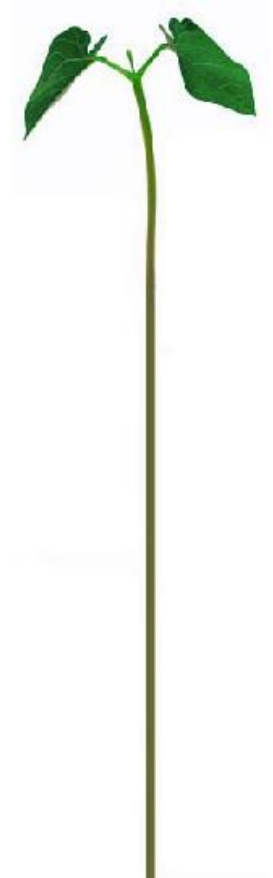




# Sales argument – 1 - Answer

## A: Fuji Triage is the answer!!

- Use the Geoff Knight article “The fissure Seal Time Bomb” (ref #1) to explain that Fuji Triage is the only material that
  - Can be used on immature enamel
  - Needs minimal isolation
  - Does not affect the occlusion when the molar erupts
  - Can bond reliable eve, when parts of the molar is covered by the hyperculum
  - Deposits fluoride to form fluor apatite making the tooth more acid resistant and will prevent plaque accumulation
- Suggest that the dentist can use
  - The pink shade for partially erupted teeth (i.e. good colour to monitor the wear/indicates temporary status) and
  - The white shade for post-eruption (better colour for more permanent fillings)



**Fuji Triage is the perfect material to “Protect” the teeth.**

# Sales argument – 2

Q: How do you restore lingual root cavities in ageing dentitions?

- Difficulties to permanently restore these cavities with composite/compomers
  - Cavities are near the saliva glands, so difficult to isolate from moisture
  - If too much of the caries is removed and the pulp is exposed the dentist sometimes can end up doing endodontic treatment

A: to avoid these problems, Fuji Triage can be used as a temporary plaster to “Seal & Heal”

## Procedure

- Soft caries is removed
- Fuji Triage is placed onto moist semi-hard dentine
- Protected with Fuji Coat LC
- Left in place for up to 6 months whilst
- Tooth heals underneath
- Composite/Fuji IX can then be placed on a healed tooth surface for better aesthetics



# Sales argument - 3

Q: How do you desensitise Hypoplastic / (Wisdom) Teeth?

- Few materials stick to the hypoplastic tooth with a sticky dentine coating
  - Problem for dentists to treat with resins

A: Fuji Triage works brilliantly as a protective desensitising coating,

- can seal the dentine and prevent further demineralisation
- also works well for partially erupted sensitive wisdom teeth

The "Protect & Seal" message works well in this case.



# Sales argument – 4

## Endodontic sealing

- Many endodontists have turned to GICs to seal access cavities after root canal treatment
- GICs give a much better seal due to the chemical bond to tooth structure
- Many of them require a material that is not tooth coloured so that they can identify it



Good endodontic filling with poor  
coronal restoration



Good endodontic filling with good  
coronal restoration

Sales argument – 5,6,7.....

## There are many more uses for Fuji Triage such as

- Temporary filling material- pink, to make sure the patient returns for their permanent filling!
- Lining when near the pulp in e.g. a child's tooth etc.
- Sealing cavities after treatment with Ozone/Photo Activated Disinfection (PAD) Dentists have been recommended to use Fuji Triage by Kavo and Denfotex

# Sales argument - summary

## 1sts questions

- “Do you treat lots of children/elderly patients?”
- “Do you do much fissure sealing?”
- Then choose the best argument

## Possibility to use a plastic model to demonstrate

- How the Fuji Triage flows into the fissures
- How the dentist can use one capsule to protect 3-4 fissures at once

## If the dentists/hygienists find that it sets too quickly for them,

- Store Fuji Triage somewhere cold to increase the working time

Thank you,

for your attention.

***GC***