



# RIVA STAR

# RIVA STAR AQUA

## THE NEXT GENERATION SDF SYSTEM

» Caries arrest increased dramatically after re-application of 38% SDF from 1 year post treatment to 1.5 years and increasingly to 2-3 years «

Source: UCSF protocol for caries arrest using Silver Diamine Fluoride : J. Horst, H. Ellenikiotis, UCSF Silver Caries Arrest Committee and Peter M Milgrom 2016



# WHY SDF USE IS GROWING AROUND THE WORLD

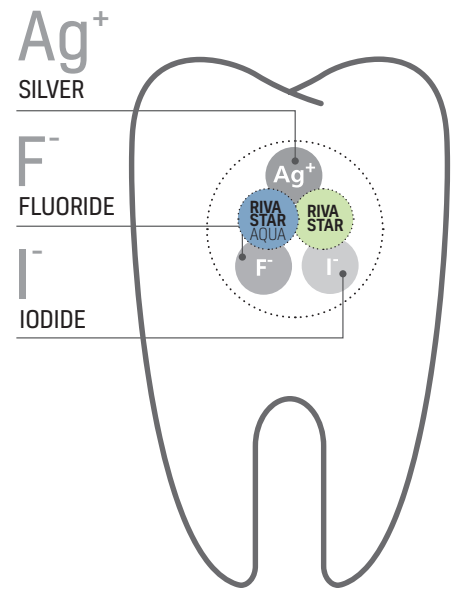
SDF has a proven clinical history of arresting caries and treating dentine hypersensitivity for over 50 years. Studies continue to confirm that a 38% SDF solution<sup>1</sup> can arrest dental caries by minimising the loss of minerals and collagen destruction. Furthermore, the high concentration of silver and fluoride ions inhibits the growth of cariogenic biofilms.

## HOW DOES SDF WORK?<sup>2</sup>

### AS CARIES INHIBITOR

SDF + KI provides the following three active components to caries affected sites :

- SILVER** ●●●► Silver compounds are used as an anti microbial agent in dentistry for more than a century.
- FLUORIDE** ●●●► Works as a bacteriostatic effect to prevent the further demineralisation of tooth structure.
- IODIDE** ●●●► Potassium Iodide used in conjunction with SDF provides a powerful antimicrobial effect as well as reducing potential staining of teeth.



SDF treatment is quicker and easier compared to invasive treatment methods.

SDF treatment delivers Minimal Intervention Dentistry that adopts the philosophy of integrating prevention, remineralisation and less invasive procedures.

	SDF: Minimal invasive dentistry	Invasive treatments
Quick and efficient	✓	—
Easy and simple to use	✓	—
Cost effective intervention	✓	—
Hand excavation possible	✓	—
No anaesthesia required	✓	—
No drilling required	✓	—
No restoration required	✓	—
No polishing required	✓	—
No post procedure sensitivity	✓	—

Traditionally, caries treatment is invasive, and takes time. SDF is minimally invasive and reduces this time significantly.

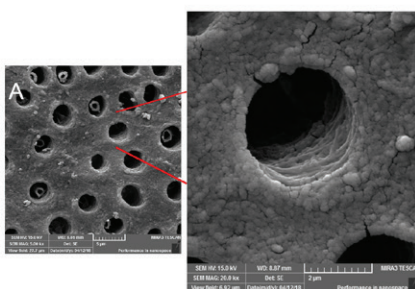
# SDF: A PROVEN CLINICAL HISTORY OF ARRESTING CARIES

## SDF CLINICAL FINDINGS<sup>3</sup>

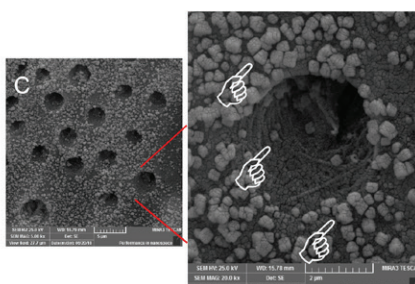
- ✓ Stabilisation/arrest of caries into dentine in deciduous teeth e.g may avoid the need for hospital admission (GA/Sedation)
- ✓ Stabilisation/arrest of caries in elderly patients e.g root caries
- ✓ Quick and easy application makes it useful for patients who are: vulnerable, uncooperative, have behavioural problems and those with limited access to conventional dental treatment
- ✓ Relief of symptoms from carious cavities [especially occlusal lesions]
- ✓ Immediate relief of dentine hypersensitivity [Silver iodide blocks dentine tubules and has low solubility] e.g cervical abrasion cavities
- ✓ Inexpensive and obviates the need for local anaesthesia
- ✓ Promotes minimally invasive cavity preparation [eliminating the need for extensive caries excavation]
- ✓ Minimises the need for aerosol generating procedures
- ✓ Acclimatisation to dental treatment and stabilisation of multiple lesions  
Remineralisation of incipient carious lesions [2-3 times more fluoride concentration than sodium fluoride varnish]
- ✓ Endodontic irrigation and inter-appointment medicament

## CLINICAL STUDY EXAMPLES

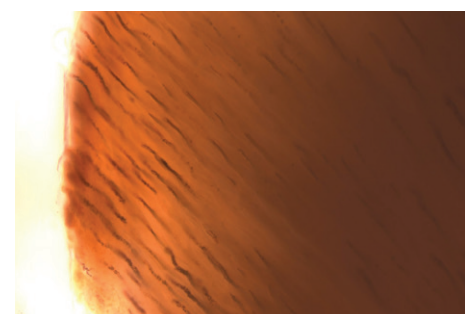
- The use of silver diamine fluoride (SDF) in dental practice, 2020. N. Sefio, M. Robertson, J. MacLean, K. Blain, S. Grosse, R. Milne, C. Seeballuck and N. Innes.
- Clinical summary : Uses of Silver Diammine Fluoride[SDF] - Ngo Hien
- Use of Silver Diamine Fluoride for dental caries management in children and adolescents, including those with special health care needs : 2017 - American Academy of Paediatric Dentistry



Dentin tubules pre treatment



Dentin tubules post treatment with SDF+KI showing Silver Iodide precipitate



50µm

Silver Iodide crystals are seen within the dentinal tubules with the use of SDF and KI [Riva Star].

Image courtesy of Dr. Geoff Knight

# SDF INNOVATION: RIVA STAR

Drawing on 50 years of dental research experience and proudly developed in SDI's state of the art manufacturing facility in Australia, Riva Star is a silver diamine fluoride solution system used to desensitise tooth pain immediately.

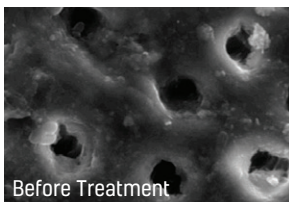
This next generation SDF treatment delivers Minimal Intervention Dentistry that adopts the philosophy of integrating prevention, remineralisation and minimal intervention.



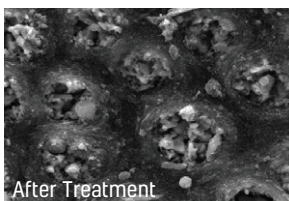
## RIVA STAR KEY BENEFITS

**1 A PROVEN SDF SOLUTION**  
Clinical studies have shown that a 38% SDF solution can successfully arrest caries<sup>4</sup>.  
**Riva Star SDF solution contains 38% Silver Fluoride**

**2 IMMEDIATE SENSITIVITY RELIEF**  
The silver fluoride and potassium iodide in Riva Star blocks the microscopic tubules that make up dentine. A low-solubility precipitate is formed that gives instant relief.



Exposed dentinal tubules are well known for causing dentine hypersensitivity.



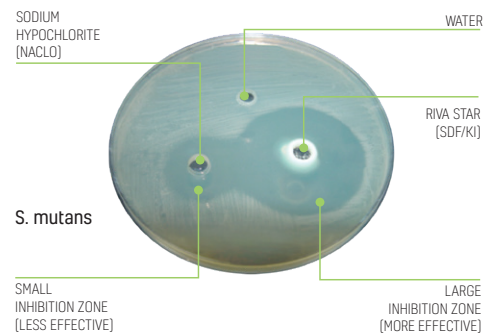
Insoluble silver iodide precipitates occluding dentinal tubules, immediately eliminating sensitivity.

Images courtesy of Dr. Geoff Knight

**3 TWO YEARS DESENSITISING EFFECT**  
A clinical study supports the immediate effect after one application with Riva Star, desensitisation lasts for 2 years.<sup>5</sup>

**4 EFFECTIVE BIOFILM INHIBITOR**  
Studies support that Riva Star is an effective Biofilm inhibitor. Riva Star has higher inhibition zones against four bacterial species (*E.faecalis*, *S.gordonni*, *S.mutans*, *S.mitis*) compared to sodium hypochlorite.<sup>6</sup>

### AGAR PLATE CULTURED WITH S. MUTANS



**5 REDUCE STAINING**  
Unlike other silver fluoride systems, the Riva Star two step procedure minimises the risk of staining.

By applying the potassium iodide solution (KI) over the silver diamine fluoride (SDF), a silver iodide creamy white precipitate is formed which then turns clear.



Treatment of caries with SDF alone, resulting in areas of staining

Image courtesy of Dr. Julia Barros and Dr. Leticia Vieira - Brazil



7 days post treatment for sensitivity with Riva Star [SDF + KI]

# NEXT GENERATION SDF: RIVA STAR AQUA

SDI continues to innovate SDF solutions by releasing Riva Star Aqua, a next generation water based silver fluoride solution that is also effective in arresting carious lesions as an SDF solution<sup>7</sup>, with additional patient benefits.

Similar to Riva Star (SDF), Riva Star Aqua (AgF) is also a non-invasive 2 step patented system used to desensitise tooth pain in a few drops. Riva Star Aqua is an aqueous silver fluoride solution without the Ammonia base.



## RIVA STAR AQUA KEY BENEFITS

**1 CLINICAL MATCH TO SDF**  
Clinical studies have shown that Riva Star Aqua's 38% Silver Fluoride (AgF) is also effective in arresting carious lesions as Riva Star SDF solution containing 38% Silver Fluoride.<sup>7</sup>

**2 IMMEDIATE SENSITIVITY RELIEF**  
The silver fluoride and potassium iodide in Riva Star Aqua blocks the microscopic tubules that make up dentine. A low-solubility precipitate is formed that gives instant relief.

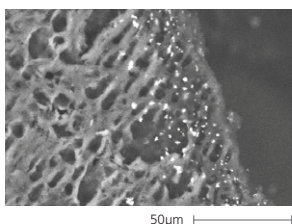


Image shows the reaction of AgF and KI to AgI in the first 50 microns below the surface.

Image courtesy of Dr. Geoff Knight

**3 REDUCE STAINING**  
Just like Riva Star, Riva Star Aqua includes a Potassium Iodide (KI) Step 2 solution, for significantly reducing unsightly black stains.

**4 TWO YEARS DESENSITISING EFFECT**  
A clinical study supports the immediate effect after one application with Riva Star, desensitisation lasts for 2 years.<sup>5</sup>

**5 EFFECTIVE BIOFILM INHIBITOR**  
Studies support that Riva Star is an effective Biofilm inhibitor. Riva Star has a higher inhibition zone against four bacterial species compared to sodium hypochlorite<sup>6</sup>.

**6 NO TISSUE BURN RISK**  
Riva Star Aqua is water based and ammonia free. This reduces soft tissue irritation and eliminates odours while improving storage stability.

**7 NO GINGIVAL BARRIER REQUIRED**  
With no ammonia present, Riva Star Aqua can be safely used without a gingival barrier as soft tissue irritation is significantly reduced. Treatment time is quicker and more comfortable on patients.

**8 IMPROVED SMELL**  
The ammonia free solution tastes and smells better, leading to happier, more compliant patients.

# PRODUCT COMPARISON



## RIVA STAR Silver Diamine Fluoride (SDF)

## RIVA STAR AQUA Silver Fluoride (AgF)

<b>Indications</b>	<b>USA</b>	<ul style="list-style-type: none"> <li>- Treatment of dentinal hypersensitivity.</li> <li>- For use in adults over the age of 21.</li> </ul>	<ul style="list-style-type: none"> <li>- Treatment of dentinal hypersensitivity.</li> <li>- For use in adults over the age of 21.</li> </ul>
	<b>BRAZIL LATIN AMERICA</b>	<ul style="list-style-type: none"> <li>- Desensitising cervical tooth hypersensitivity.</li> <li>- Arresting caries</li> <li>- Detecting caries</li> </ul>	<ul style="list-style-type: none"> <li>- Desensitising cervical tooth hypersensitivity.</li> <li>- Arresting caries</li> <li>- Detecting caries</li> </ul>
	<b>AUSTRALIA EUROPE</b>	<ul style="list-style-type: none"> <li>- Desensitising cervical tooth hypersensitivity.</li> </ul>	<ul style="list-style-type: none"> <li>- Desensitising cervical tooth hypersensitivity.</li> </ul>
	<b>CANADA</b>	<ul style="list-style-type: none"> <li>- Anti-caries.</li> <li>- Prevents, fights and/or protects against cavities or caries. Effective decay preventive fluoride.</li> <li>- Helps reverse the tooth decay process at the earliest stage before it can become a cavity.</li> <li>- Helps to reduce sensitivity in cervical hypersensitive teeth in adults.</li> </ul>	<ul style="list-style-type: none"> <li>- Not currently available in Canada</li> </ul>
<b>Process</b>		2 step patented process	2 step patented process
<b>Formulation</b>		<b>Step 1 :</b> 38% Silver Fluoride in an ammonia solution (SDF). Higher pH levels <b>Step 2 :</b> Potassium Iodide solution	<b>Step 1 :</b> ≈38% Silver Fluoride (AgF) in water. Physiological pH levels <b>Step 2 :</b> Potassium Iodide solution
<b>Active ingredients</b>		<b>Step 1 :</b> Silver / Fluoride / Ammonia <b>Step 2 :</b> Potassium Iodide	<b>Step 1 :</b> Silver / Fluoride / Water <b>Step 2 :</b> Potassium Iodide
<b>Works as a caries inhibitor</b>		✓	✓
<b>Two years and beyond desensitising effect</b>		✓	✓
<b>Staining reduction / elimination</b>		✓	✓
<b>Deep penetration and prevention of biofilm</b>		✓	✓
<b>Antimicrobial activity</b>		✓	✓
<b>Increasing bond strengths of GICs</b>		✓	✓
<b>Storage requirements</b>		<b>Bottles :</b> Room temperature <b>Capsules :</b> Refrigerated	✓ Room temperature
<b>Soft tissue irritation</b>		Mild discomfort	✓ No discomfort
<b>Odour / Taste</b>		Slight Ammonia taste and odour	✓ No Ammonia taste and odour
<b>Non-invasive / MID (Minimally Invasive Dentistry)</b>		✓	✓

# USING SDF IN YOUR CLINIC

» Both AgF [Riva Star Aqua] and SDF [Riva Star] can effectively arrest carious lesions on primary teeth. «

Source : Turton B, Horn R, Durward C. Caries arrest and lesion appearance using two different silver fluoride therapies on primary teeth with and without potassium iodide : 12 month results. Clin Exp Dent res 2020;1-11

## USING SDF IN YOUR CLINIC: A STEP BY STEP GUIDE



**Author: Louis Mackenzie**  
Head Dental Officer at Denplan,  
General Dental Practitioner



### SILVER DIAMINE FLUORIDE: A PRACTICAL GUIDE

by Louis Mackenzie

This helpful guide provides step by step instructions on how to use SDF for caries management in your dental practice.

Download via QR code



**Author:**  
**Dr Carla Cohn DMD**



### RIVA STAR FOR THE GENERAL PRACTITIONER

by Dr Carla Cohn DMD

This video provides step by step instructions on the use of Riva Star.

Download via QR code



<sup>1</sup> Clinical trials of Silver Diamine Fluoride in arresting caries among children. A systematic review - S.S Gao, I.S. Zhao, N. Hirashi, D. Duangthip, M.L. Mei, E.C.M Lo and C.H. Chu 2016

<sup>2</sup> Ngo Hien Clinical summary : Uses of Silver Diammine Fluoride[SDF]

<sup>3</sup> Silver diamine fluoride : A practical guide - Louis Mackenzie

<sup>4</sup> UCSF protocol for caries arrest using Silver Diamine Fluoride : J. Horst, H. Ellenikiotis, UCSF Silver Caries Arrest Committee and Peter M Milgrom 2016

<sup>5</sup> Clinical evaluation of a diamine silver fluoride/potassium iodide as a dentine desensitizing agent: 2-year follow up. Craig G G - 2014.

<sup>6</sup> Heo J Tomkins GR, Love RM ; Evaluation of the antimicrobial activity of combined Silver Diammine Fluoride (SDF) and Potassium Iodide (KI) as an Endodontic Medicament, University of Otago, New Zealand, 2010

<sup>7</sup> Turton B, Horn R, Durward C. Caries arrest and lesion appearance using two different silver fluoride therapies on primary teeth with and without potassium iodide : 12 month results. Clin Exp Dent res 2020;1-11

# ORDER DETAILS



## RIVA STAR

### Riva Star Kit

10 x Riva Star Step 1 Silver Capsules  
10 x Riva Star Step 2 Green Capsules  
2 x 1mL Gingival Barrier syringes  
Accessories

BRAZIL/LATIN AMERICA	8800502
USA	8800504
EUROPE	8800505
AUSTRALIA	8800507
CANADA	8800503



## RIVA STAR AQUA

### Riva Star Aqua Kit

10 x Riva Star Aqua Step 1 Silver-Blue Capsules  
10 x Riva Star Step 2 Green Capsules  
Accessories

BRAZIL/LATIN AMERICA	8800528
USA	8800527
EUROPE	8800525
AUSTRALIA	8800526

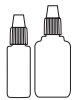


## RIVA STAR

### Riva Star Bottle Kit

1 x 1.5mL Riva Star Step 1 Bottle  
1 x 3.0mL Riva Star Step 2 Bottle

BRAZIL/LATIN AMERICA	8800538
USA	8800537
EUROPE	8800535
AUSTRALIA	8800536
CANADA	8800539



## RIVA STAR AQUA

### Riva Star Aqua Bottle Kit

1 x 1.5mL Riva Star Aqua Step 1 Bottle  
1 x 3.0mL Riva Star Step 2 Bottle

BRAZIL/LATIN AMERICA	8800533
USA	8800532
EUROPE	8800530
AUSTRALIA	8800531



YOUR SMILE. OUR VISION.



04-2021

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+0036M1005701.

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by SDI Limited  
Bayswater, Victoria 3153, Australia  
[www.sdi.com.au](http://www.sdi.com.au)  
[www.rivastar.com](http://www.rivastar.com)

**AUSTRALIA** 1800 337 003  
**AUSTRIA** 00800 0225 5734  
**BRAZIL** 0800 770 1735  
**FRANCE** 00800 0225 5734  
**GERMANY** 0800 100 5759

**ITALY** 00800 0225 5734  
**NEW ZEALAND** +64 21 400 323  
**SPAIN** 00800 0225 5734  
**UNITED KINGDOM** 00800 0225 5734  
**USA & CANADA** 1 800 228 5166