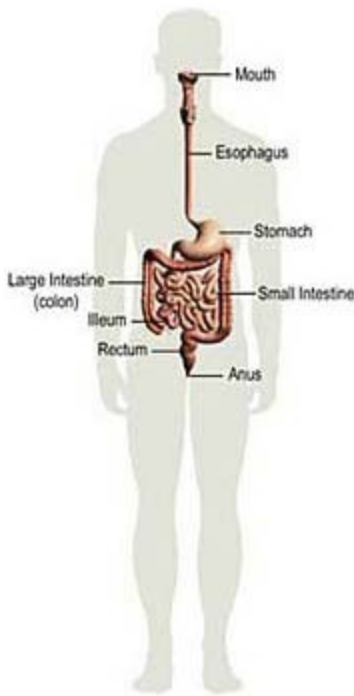


# Fluoride and Gastrointestinal Tract



**GI Complaints of Fluorosis Disease produce symptoms of Irritable Bowel Syndrome (IBS) and Colic (babies):**

- Pain in the stomach
- Constipation
- Intermittent Diarrhoea
- Bloating Stomach (Flatulence)
- Loss of Appetite
- Nausea

**GI symptoms are the earliest manifestations due to fluoride poisoning. Detecting fluorosis at this early stage has made the prevention of permanent fluorosis possible.**

Prof. (Dr.) A.K. Susheela, F.A.Sc., F.A.M.S. Ashoka  
Fellow Executive Director, Fluorosis Research Foundation  
of India Presentation to British Parliament 1999

<http://www.fluorideandfluorosis.com/BritishParliament/Statement4.html>

<http://www.fluorideandfluorosis.com/BritishParliament/Statement9.html>

## **Diagnostic Procedures:**

Medical History

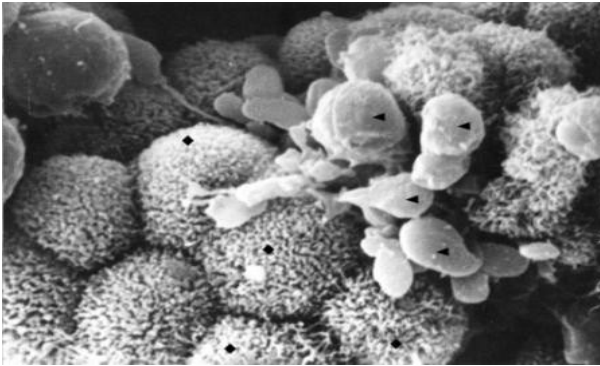
Diagnostic Tests

- Fluoride in blood, urine and nails (potentiometric method)
- Fluoride in drinking water
- Radiograph of forearm (interosseous membrane calcification)
- Haemoglobin (cyanmethaemoglobin method)
- Thyroid Tests: TSH, free T4, free T3
- Iodine (urine)

Identify Fluoride Sources and Eliminate

- Fluoride in drinking water
- Fluoride in food and beverages
- Dental products
- Drugs
- Industrial Emissions

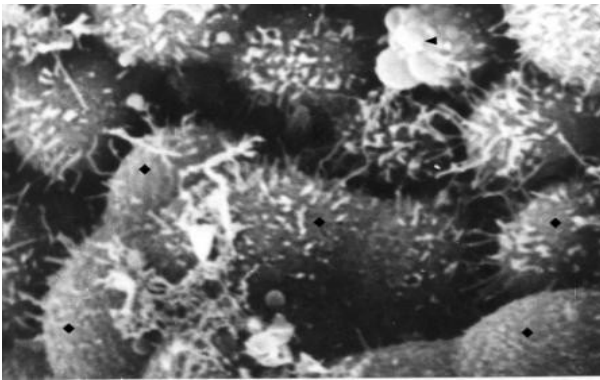
**Fig 1** Scanning electron micrograph of Gastro-intestinal mucosa of a normal healthy adult individual (control)



(1) columnar cells studded with microvilli on the cell surface.

(2) The white mass spread around the mucosa is the mucus which helps in comfortable bowel movement

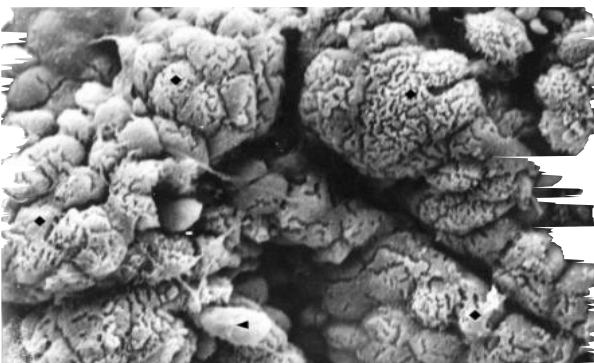
**Fig 2** Scanning electron micrograph of Gastro-intestinal mucosa of an individual suffering from Irritable Bowel Syndrome due to fluorosis, consuming water contaminated with 1.2 ppm (mg/l) of fluoride.



The columnar cell surfaces are exposed (naked) as:

- presence of scanty microvilli
- very little mucus secretion seen on the mucosal surface

**Fig 3** Scanning electron micrograph of Gastro-intestinal mucosa, of an individual suffering from a more severe form of Irritable Bowel Syndrome.



The columnar cell surfaces lining the gut are exposed (naked) and appear:

- cracked
- no microvilli
- no mucus secretions are seen