**Introduction**

Oral mucositis presents itself as severe mouth sores, oral and gastrointestinal ulcers, difficulty swallowing, and redness of the mouth as a result of cancer treatment with head and neck cancer. Oral mucositis can disrupt patient treatment. This debilitating side effect affects approximately 500,000 patients undergoing cancer therapy in the U.S.

Mucositis follows a five step model that involves the stages of initiation, upregulation, signaling and amplification, ulceration and healing. Oral mucositis begins with an innate immune response which is triggered by a family of Pattern Recognition Receptors (PRRs). There are four classes of PRRs and the upregulation of certain PRRs can lead to the prevention of the initiation phase of mucositis.

With cancer being the leading cause of death in the U.S. and many patients fall victim to oral mucositis as an adverse side effect, it is important to find a way to prevent the development of oral mucositis.

**Traditional Treatment Methods and Disadvantages**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Disadvantage(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cryotherapy*</td>
<td>Development is not prevented</td>
</tr>
<tr>
<td>Mouthwashes and Rinses*</td>
<td>Development not prevented, pain reduced slightly</td>
</tr>
<tr>
<td>Antibiotics: Polymyxin E tobramycin and amphotericin B*</td>
<td>Increase risk of toxicity and resistance to antibiotics</td>
</tr>
<tr>
<td>Accelerated radiotherapy</td>
<td>Development of influenza. Low tolerance for treatment. Persistence of severe oral mucositis</td>
</tr>
<tr>
<td>Morning radiotherapy*</td>
<td>Toxicity rate not reduced</td>
</tr>
<tr>
<td>Povidone iodine*</td>
<td>Patients do not like the taste</td>
</tr>
</tbody>
</table>

**Receptors of Inflammation in Human Body**

**Table 2. Breakdown of Pattern Recognition Receptors (PRRs)**

Pattern recognition receptors (PRRs) are divided into pathogen associated molecular patterns (PAMPs) and damage associated molecular patterns (DAMPs).

**PRRs**
- Pathogen Associated Molecular Patterns (PAMPs)
  - Membrane bound
  - Toll-Like Receptors (TLRs)
  - C-Type Lectin Receptors (CLR)
- Damage Associated Molecular Patterns (DAMPs)
  - In cytoplasm
  - NOD-Like Receptors (NLRs)
  - RIG-Like Receptors (RLRs)

**Mechanism of Inflammation**

**Table 3. Model for oral mucositis**

**New Treatment Approaches**

**Table 4. Approaches to treatment of oral mucositis**

**References and Acknowledgements**

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