

Closer to an effective treatment for gum disease in smokers

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Scientists in the USA have discovered why smokers may be more prone to chronic gum disease (periodontitis). One of the bacteria responsible for this infection responds to cigarette smoke - changing its properties and the way it infects a smokers mouth.

The study published recently in the Society for Applied Microbiology journal *Environmental Microbiology*, showed that the bacterium *Porphyromonas gingivalis* adapts and changes its DNA and membrane proteins in response to cigarette smoke.

Several genes of *P. gingivalis* associated with its virulence (infectivity), detoxification, oxidative stress mechanisms and DNA repair are altered by exposure to cigarette smoke. As a result, the expression of a number of the proteins in the cell membrane is changed. This affects important characteristics of the [bacterial cells](#) themselves and how the immune system recognizes this pathogen.

This could explain why [smokers](#) are more likely to be resistant to treatment for periodontitis and are more susceptible to oral disease caused by infection with *P. gingivalis*.

Finding an effective treatment for smokers infected with *P. gingivalis* will be easier now that these changes in the bacterium's 'properties' have been identified.

University of Louisville researcher, Dr David Scott said: "It has long

been known that smokers are more susceptible to periodontitis than are non-smokers. However, the reasons why are not so clear. Our study shows, for the first time, that components in [cigarette smoke](#) alter key characteristics of a major [bacterial pathogen](#) which, subsequently, changes how our immune system reacts to it. It may turn out that we need to develop alternate treatment plans for smokers and non-smokers".

Source: Wiley ([news](#) : [web](#))

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