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This occasional section within the journal surveys visions and achievements, often not on the main track of the developing biomedical sciences, but all relating to discoveries and developments of medicinal – both ancient and modern. What they have in common, in one way or another, is providing further background and glances around the edges of the core discipline of pharmacognosy, as it has been and continues to evolve within our times.

Finely Ground *Camellia sinensis* (L.) Kuntze leaves (Matcha) Inhibits *Porphyromonas gingivalis* Growth and therefore may be Useful to Control Periodontitis

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Periodontal (gum) disease is a serious disease that may result in bones retracting from teeth, loss of teeth (or bone) and halitosis (bad breath). In its early stages (gingivitis), the gums may become swollen, inflamed and may bleed. Numerous plants have been used in traditional medicine systems to prevent and treat periodontal disease, with many plants highlighted for their efficacy.[1-4] A recent study reported that matcha tea (prepared from finely ground *Camellia sinensis* (L.) Kuntze powder) inhibits the growth of the bacterium *Porphyromonas gingivalis*, which is one of the main bacteria that cause gingivitis and periodontitis.[5] Indeed, MIC values as low as 125 µg/mL were reported against this bacterium, indicating that the extract is a potent inhibitor. The matcha extract also inhibited the growth of other bacteria associated with periodontal disease, including *Prevotella nigrescens* and *Fusobacterium nucleatum*. Interestingly, the matcha extract had little or no effects against multiple strains of commensal oral bacteria. The ability to inhibit the pathogenic bacteria whilst not otherwise adversely affecting the oral microbiome further highlights the potential of matcha extracts as mouthwashes to prevent and treat periodontal disease.

The authors of that study also undertook clinical studies using matcha extracts at the Nihon University Hospital School of Dentistry, Matsudo to evaluate its efficacy *in vivo*. Forty-five volunteers with chronic periodontitis were recruited and divided into three groups with different treatment regimens: barley infusion mouthwash; matcha extract mouthwash; or sodium azulene hydrate (to treat inflammation). Notably, the group treated with the matcha extract showed significant reductions in *P. gingivalis* levels compared to the other two groups. The researchers reported that the growth inhibition was associated with decreases in bacterial membrane permeability (without loss of membrane integrity) and auto-aggregation via fimbrae-dependent mechanisms. Additionally, the authors of

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that study identified the pyrogallol ring structure of catechins is responsible for the anti- *P. gingivalis* activity of the matcha extract.

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Kaempferia galanga L. Extracts and its Component Ethyl p-methoxycinnamate Supress Cancer Cell Growth

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A recent study from researchers at Osaka Metroploitan University, Japan have reported that extracts prepared using *Kaempferia galanga* L. (commonly known as Kencur ginger) inhibit the proliferation of Ehrlich Ascites Tumour Cells (EATC) by inhibiting progression through the S-phase of the cell cycle.[1] Furthermore, the authors of this study used HPLC to identify p-methoxycinnamate as the major extract component and reported that this compound had similar effects to those of the crude extract, indicating that *p*-methoxycinnamate is responsible for the activity of the extract. The authors also examined several other properties of p-methoxycinnamate and reported that as well as blocking the S-phase of the cell cycle, it also downregulated cyclin D1 and upregulated p21. It also downregulated transcription of Mitochondrial Transcription Factor A (MTFA) without significantly affecting mitochondrial numbers or membrane potential. Additionally, *p*-methoxycinnamate exposure reduced phosphorylation of Ser^{6} of the transcription factor c-Myc via a reduction of *H-ras* expression. The authors also investigated the *in vivo* effects of *p*-methoxycinnamate in an EATC bearing murine model and reported that it significant decreased ascites fluid production in mice treated intraperitoneally with EATCs.

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