Technology Offer

Ref.-No. M03/20

Compounds and their use in diagnostics

Introduction

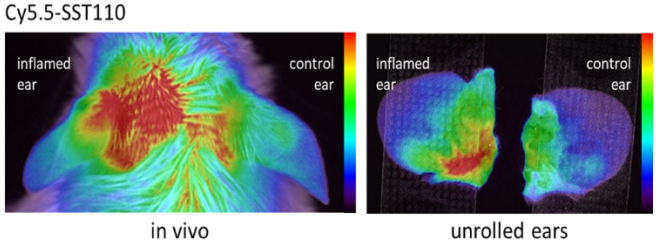
Inflammatory diseases are of high relevance in daily clinical practise and often dominated and driven by activated phagocytes. The alarmin S100A8/S100A9 is expressed and secreted in high concentrations by immigrating phagocytes at sites of inflammation and is known to trigger sterile as well as infectious inflammatory processes. S100A8 and S100A9 belong to the S100-family of Ca^{2+}-binding proteins and are involved in many immune processes. The physiological relevant forms are heterodimers and upon calcium-binding heterotetramers, both forms are also described as calprotectin. S100A8/S100A9 complexes promote inflammatory processes but helps also in tissue repair or immune defense reactions by interaction with TLR4 and other receptors.

Invention

The inventors found that the compounds according to the invention comprising a label can be used for diagnosing inflammatory diseases with high molecular sensitivity. This can be explained by specific binding of the compounds to S100A9. The compounds may not bind to or interact with S100A8, or may bind to or interact with S100A8 only to a low extent. The diagnostic approach using compounds in which a benzo[d]imidazo[1,2-a]imidazole moiety is covalently linked to a label represents the core of the invention. To analyze inflammatory processes at local site of inflammation, the inventors synthesized novel S100A9-specific ligands, which could be well suited for use in various molecular imaging methods. As provided by the present invention, such compounds could be well suited for use in *in vivo* non-invasive molecular imaging techniques.

Advantages of the invention

The present invention is based on the surprising fact that the compounds according to the invention comprising a label could be well suited for use in diagnosis of inflammatory diseases associated with an increased phagocyte and/or epithelial cell activity and an increased accumulation of S100A9. In this regard, these compounds could be successfully used for *in vivo* non-invasive molecular imaging in e.g. a model of dermatitis.



In vivo imaging using the compound Cy5.5-SST110 in an ear inflammation mouse model of irritant contact dermatitis.

Areas of application

Diagnostics, molecular imaging

Keywords

Alarmins, calprotectin, inflammatory diseases

Development Status

In vivo experiments

Commercial Opportunity

The technology is offered for in-licensing and co-development

Patent Status

PCT application has been filed.

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