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(54) Title: A BIOMARKER FOR BROWN FAT ACTIVITY DETECTION

(57) Abstract: The present invention relates to methods for detecting brown adipose tissues (BAT) activation and/or browning of white adipose tissues (WAT) to BAT by measuring the level of methylene tetrahydrofolate dehydrogenase 1-like (MTHFD1 L) protein in blood samples obtained from a subject before and after exposure to a stimulation that results in BAT activation and/or browning of WAT to BAT such as capsinoid stimulation, cold stimulation and/or hyperthyroid treatment. Also disclosed are qualitative BAT activity test kits, enzymatic chemistry based quantitative BAT activity test kit, and antibody based quantitative BAT activity test kits developed based on the detection methods disclosed herein. In addition, applications of the detection methods include detecting or monitoring a metabolic disorder or metabolic syndrome that affect BAT activity in a subject and methods of discovering a drug, a nutraceutical, and/or a functional food that activate BAT and/or induce browning of WAT to BAT in a subject.



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