Matricellular proteins are a group of extracellular matrix proteins that play important roles in regulating cell behavior, including cell adhesion, proliferation, differentiation, and survival. They do not serve a structural role in the extracellular matrix, but instead act as signaling molecules that modulate cell-matrix interactions and cell signaling pathways. Examples of matricellular proteins include thrombospondins, tenascins, and osteopontin.

Matricellular proteins have been implicated in pathologies after subarachnoid hemorrhage (SAH). To find a new therapeutic molecular target, a study aimed to clarify the relationships between serially measured plasma levels of a matricellular protein, secreted protein acidic and rich in cysteine (SPARC), and delayed cerebral ischemia (DCI) in 117 consecutive aneurysmal SAH patients with admission World Federation of Neurological Surgeons (WFNS) grades I-III. DCI developed in 25 patients with higher incidences of past history of hypertension and dyslipidemia, preoperative WFNS grade III, modified Fisher grade 4, spinal drainage, and angiographic vasospasm. Plasma SPARC levels were increased after SAH, and significantly higher in patients with than without DCI at days 7-9, and in patients with VASOGRADE-Yellow compared with VASOGRADE-Green at days 1-3 and 7-9. However, there were no relationships between plasma SPARC levels and angiographic vasospasm. Receiver-operating characteristic curves differentiating DCI from no DCI determined the cut-off value of plasma SPARC ≥ 82.1 ng/ml at days 7 - 9 (sensitivity, 0.800; specificity, 0.533; and area under the curve, 0.708), which was found to be an independent determinant of DCI development in multivariate analyses. This is the first study to show that SPARC is upregulated in peripheral blood after SAH, and that SPARC may be involved in the development of DCI without angiographic vasospasm in a clinical setting [1)].

1)
Nakajima H, Kawakita F, Oinaka H, Suzuki Y, Nampei M, Kitano Y, Nishikawa H, Fujimoto M, Miura Y, Yasuda R, Toma N, Suzuki H; pSEED group. Plasma SPARC Elevation in Delayed Cerebral Ischemia After Aneurysmal Subarachnoid Hemorrhage. Neurotherapeutics. 2023 Feb 13. doi: 10.1007/s13311-023-01351-x. Epub ahead of print. PMID: 36781745.