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THE REVIEW OF BIOMATERIALS USED FOR CONTROLLING PARENCHYMAL BLEEDING

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Uncontrolled hemorrhaging is the main cause of death due to military trauma and in civilian settings. Bleeding is still the leading cause of mortality in patients with liver trauma. The high morbidity and mortality rates may not only be attributed to the extensive blood loss but also to the long time needed to control bleeding.

Parenchymal bleeding/hemorrhage occurs when the vessels of parenchyma – the functional tissue of organs - are damaged. This type of bleeding is very dangerous because it does not spontaneously stop due to the presence of anticoagulant substances in parenchymal organs.

In the past decades, a number of hemostatic agents have been developed and used to raise the survival rate and reduce bleeding complications. An ideal hemostatic agent should not only quickly control massive hemorrhage from large arteries, veins and visceral organs but also have good biocompatibility, and it should be ready and easy to use, lightweight, stable and inexpensive.
This review based on research and review paper from following databases – ScienseDirrect, Google Scholar and PubMed Central and show last date about haemostatic biomaterials.

A large number of biomaterials in a variety of forms have been studied for control of different kinds of bleeding. This biological hemostatic agents work by either simulating naturally occurring processes, such as steps in the coagulation cascade, or directly causing vasoconstriction. These materials may be categorized according to their forms and types as solid sheets normally known as hemostatic dressings, solid particles or powders and fibers hydrogels, liquid tissue sealants, and dispersions, made from natural or synthetic polymers, ceramics and their combinations.

THE NEUROTOXIC EFFECT OF FORMALDEHYDE ON HUMAN CULTURED CELLS

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Methanol is the simplest alcohol, being only a methyl group linked to a hydroxyl group. It is very similar to ethanol, a drinking alcohol. However, unlike ethanol, methanol is highly toxic and unfit for consumption. The intoxication of methanol is associated with early development of neurological symptoms followed by neurodegeneration including blurring or complete loss of vision. We investigate the effect of methanol and its metabolites, such formaldehyde and formate, on the survival of human neuronal and glial cells. Human primary glial (NHA), neuroblastoma (SH-SY5Y) and glioblastoma (T98G) cell lines were used as the study models. The cultured media were supplemented with different concentration of methanol, formaldehyde and formate up to concentration 25 mmol/L. The viability of cells was evaluated microscopically and by biochemical methods after 72 h incubation of cell in 5%CO2 in humidified atmosphere. These methods have revealed that methanol and formate, in the level up to 25 mmol/L, had no toxic effect on the survival of all tested cell lines. Supplementation of cultured media with formaldehyde at the concentration 2.5 μM induced death in all types of cell lines. Furthermore, formaldehyde appeared to be an extremely potent neurotoxic agent in contrast to methanol and formate. Therefore, we may conclude that during methanol intoxification through formaldehyde, this agent is the main reason to exert neurodegenerative effect.

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