Efficacy of a jellyfish sting inhibitor in preventing jellyfish stings in normal volunteers

Objective: To evaluate the protective effects of a jellyfish sting inhibitor formulated in sunscreen lotion vs conventional sunscreen against Chrysaora fuscescens and Chiropsalmus quadrumanus jellyfish.

Methods: Twenty-four healthy subjects at 2 research sites were randomly assigned to receive the jellyfish sting inhibitor (Nidaria Technology Ltd, Jordan Valley, Israel) to one forearm and conventional sunscreen to the other arm in a blinded fashion. Subjects were stung with jellyfish tentacles on each forearm for up to 60 seconds. Erythema and pain were assessed at 15-minute intervals over a 2-hour period.

Results: In the C. fuscescens group, all 12 arms pretreated with conventional sunscreen demonstrated erythema, and all subjects noted subjective discomfort. In contrast, no arm pretreated with the jellyfish sting inhibitor had objective skin changes (P < .01). Two subjects noted minimal discomfort in the arm treated with the sting inhibitor (P < .01). In the C. quadrumanus group, discomfort was reported in 3 of the 12 inhibitor-treated arms compared with 10 of the 12 placebo-treated arms (P < .05). Erythema was noted on 1 arm treated with the inhibitor and 9 arms treated with the placebo (P < .01).

Conclusions: The jellyfish sting inhibitor prevented sting symptoms of C. fuscescens jellyfish in 10 of 12 subjects and diminished the pain of the jellyfish sting in the remaining 2 subjects. The jellyfish sting inhibitor also inhibited the more severe sting of the C. quadrumanus jellyfish in the majority of subjects. The jellyfish sting inhibitor does not eliminate the sting from C. fuscescens or C. quadrumanus jellyfish but significantly reduces the frequency and severity of stings.

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Key words
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Cerebral effects of hyperbaric oxygen breathing: a CBF SPECT study on professional divers

We investigated the effects on cerebral blood flow (CBF) of pure oxygen breathing exposure during dives in a group of professional divers, in both the normobaric (NBO) and the hyperbaric oxygen (HBO) breathing conditions. Using single photon emission computerized tomography (SPECT) and Tc-99m hexamethylpropyleneamine oxime (HM-PAO), we studied 10 young divers and six normal volunteers. Divers were studied by SPECT in the NBO and HBO conditions, in two different sessions. The HBO state was obtained in a hyperbaric chamber at 2.8 ATA for 15 min. By ANOVA, we did not observe any significant difference in CBF distribution between controls and divers in both NBO and HBO conditions. By individual analysis, divers showed a decreased CBF in a total of 33 regions of interest (ROIs) during NBO and 46 ROIs during HBO with respect to control values. In particular, two divers showed a remarkable increase in the number of hypoperfused ROIs during HBO (+7 and +5 ROIs, respectively). Pure oxygen breathing exposure in young divers is associated with a patchy distribution of brain areas of hypoperfusion. This phenomenon is more pronounced in the HBO state than in the NBO state. Further studies on CBF are needed to help identify divers potentially prone to harmful oxygen effects.

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Commentary by Paul Langton, Perth WA:

This paper examines the effects of pure oxygen on cerebral blood flow. In this small study there was no overall difference in cerebral blood flow under normobaric or hyperbaric conditions, in either young divers or control subjects. The study was not powered to detect small differences between these conditions and groups. Sub-analysis based on individual regions of interest demonstrated a relative reduction in (asymptomatic) cerebral perfusion during pure oxygen breathing. The significance of this observation is unclear. Arguably, the principal role of cerebral blood flow is oxygen delivery. It is plausible that the reduction in perfusion in the setting of high, normobaric blood oxygen saturations is simply an example of auto-regulation.

In contrast, the $P_{O_2}$ achieved with hyperbaric oxygen is likely to be several orders of magnitude greater than that seen physiologically. In this setting the potential for hyperoxic vasospasm is increased. Ideally, this laboratory observation needs to be correlated against a measure of cerebral function related to the identified ‘regions of interest’. The hyperbaric oxygen exposures may be of relevance to patients receiving HBO therapy and their chamber attendants. In isolation, the findings are of little relevance to recreational diving. Larger studies with clinical or functional correlates will be of interest.

Key words
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Is diving safer than skiing?

Ben Davison, the Editor of Undercurrent, writes:

Though DEMA’s [Diving Equipment and Marketing Association] published goals include “speaking on behalf of the sport,” I could take issue with some of its efforts to do so. Take, for instance, its latest effort to discredit the premise behind the movie Open Water, where divers are left at sea when their dive boat departs without them. DEMA’s public statement on the film was that these were circumstances not likely to occur in the real world of diving — when, of course, the events of Open Water were inspired by a real-life incident…[Editor’s note – there have been several instances of divers being left behind at dive sites, including the couple on the Great Barrier Reef and a large group of divers lost off an island in Palau].

If we want to ‘get the facts’ about diving’s risk, the National Sporting Goods Association has done a comparison of fatalities in several popular outdoor sports [Table 1]. Unfortunately, based on the statistics, diving doesn’t rank well when compared with swimming, skiing or bicycling, and these statistics may even be deflated given the varied lengths of a typical sports day. For example, the typical scuba boat diver puts in about 1.5 hours during a day of participation (balancing one-tank days with multi-tank days), with shore divers putting in somewhat more time getting to and from dive sites. But skiers and cyclists probably put in more hours per day most of the time, which would lower their risk for time spent even further in comparison with divers. All well and good, but to borrow Churchill’s line about “lies, damn lies and statistics,” do statistics really tell the story here? Dive risk, like that in most outdoor sports, is on a sliding scale. Downhill skiers, for example, can take the ‘f&f&f&f&’ course through the trees, or they can stick to the ‘bunny slope’. Divers can putter around beautiful coral gardens in 30 feet of water in a protected bay, or they can fly in a 10-knot current through a deep-water pass on a night dive. We dive in some places with sharks, even with lots of sharks, and, while we are very seldom attacked, it can happen. Let’s call it what it is. Hey, if we make diving sound dangerous enough, we might attract some players from the ‘extreme sports’ junkies.

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